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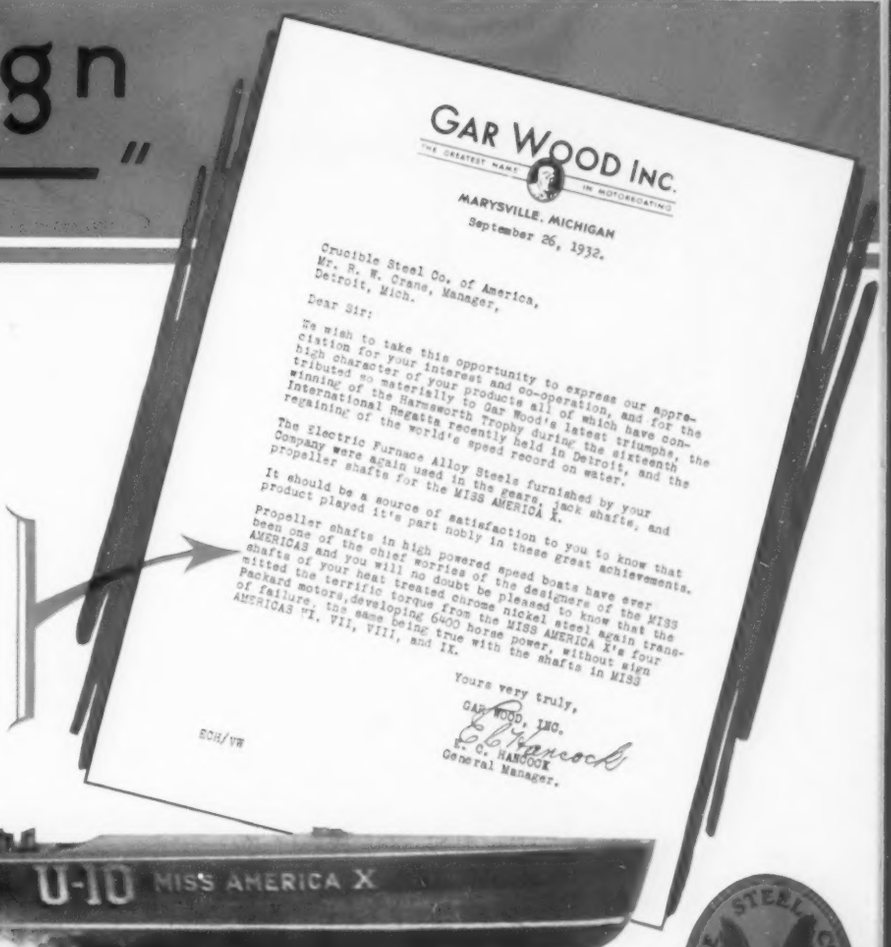
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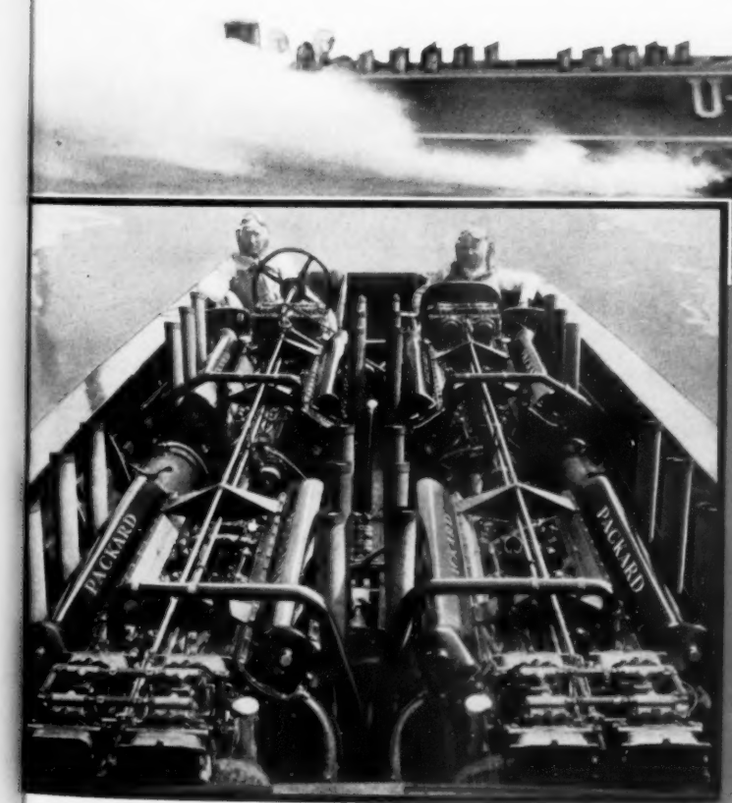
THE GREATEST NAME IN MOTORBOATING
MARYSVILLE, MICHIGAN
September 26, 1932.
Crucible Steel Co. of America,
Mr. R. W. Crane, Manager,
Detroit, Mich.
Dear Sir:
We wish to take this opportunity to express our appreciation for your interest and co-operation, and for the high character of your products all of which have contributed so materially to Gar Wood's latest triumphs, the winning of the Harmsworth Trophy during the sixteenth International Regatta recently held in Detroit, and the regaining of the world's speed record on water.
The Electric Furnace Alloy Steels furnished by your Company were again used in the gears, jack shafts, and propeller shafts for the MISS AMERICA X.
It should be a source of satisfaction to you to know that product played it's part nobly in these great achievements.
Propeller shafts in high powered speed boats have ever been one of the chief worries of the designers of the MISS AMERICAS and you will no doubt be pleased to know that the shafts of your heat treated chrome nickel steel again transmitted the terrific torque from the nickel steel four Packard motors, developing 6400 horse power, without sign of failure, the same being true with the shafts in MISS AMERICAS VI, VII, VIII, and IX.
Yours very truly,
GAR WOOD, INC.
E. C. HANCOCK
General Manager.
ECH/VH



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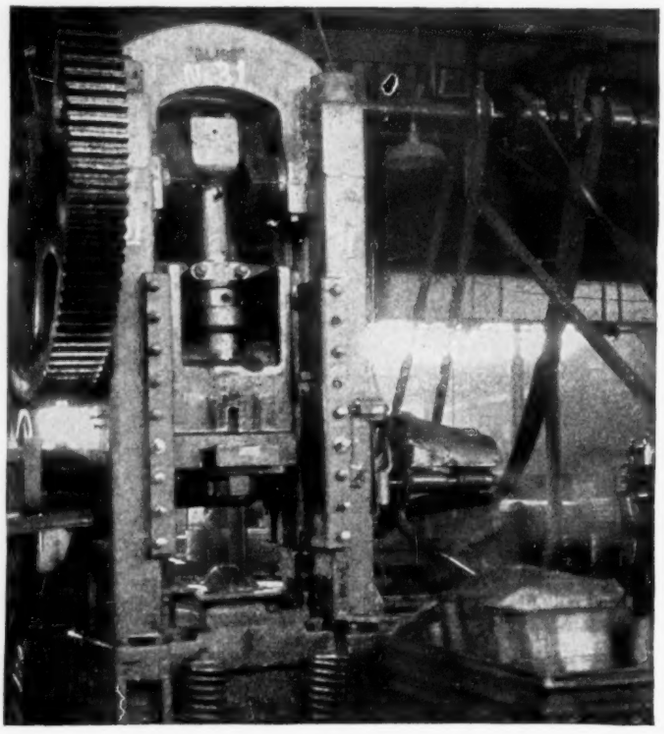

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Volume 91 Number 22

STEEL

For forty-eight Years—IRON TRADE REVIEW

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The Week in Perspective

IT USED to be said of iron and steel that it was prince or pauper. Today, of course, in common with practically all industry it has been reduced almost to pauperism, but even in its halcyon days it never rated as prince. A critical examination (p. 11) of the financial and operating history of 50 representative industries for the period 1927-30, including the approach to record 1929 and the early stages of the retreat from it, accords iron and steel a rank of only 38th. In other words, the social status of the industry is distinctly proletarian. And breaking the industry down into three groups on the basis of return on investment, 1920-31, puts the Steel corporation and five large independents at the head of the table, and five small independents at the foot.

Both United States and Europe More Confident

From the standpoint of production, steel may be truly classed as pauper, an operating rate of 17½ per cent for the week ended Nov. 26 indicating only a feeble twitching of this industrial giant, yet the industry is not dismayed by an easier market situation (p. 39). Surveying its prospects, it concludes that the descent into the holiday period will be no more than seasonal, and that the first quarter will early resume the forward march. . . . This more hopeful viewpoint is matched abroad, the London cable relating (p. 55) that both domestic and export business of British producers is widening. Finland is buying rails, the Far East is requiring more sheets, French and German exports are expanding.

New-Type Buick Fenders Take More Steel

Measuring demand for steel, it still is the automotive industry against the field, largely for 1933 models. Next of new lines to be shown is Buick, featuring (p. 15) drop fenders, vertically divided front windows for ventilation, a V-type radiator. . . . A negative contribution to an improved market situation is an increase in iron and steel exports greater than the gain in imports (p. 14). Shipments of scrap almost doubled in October, imports of iron almost tripled. . . . Importers at New York are aroused at the municipal ban on foreign steel, contending (p. 17) this only aggravates unemployment locally.

Bolt, Nut, Rivet Demand and Processes Better

An exception to the generally easier market situation are bolts, nuts and rivets (p. 46), demand for which, especially from the railroads, is slightly broader. . . . Toward steady improvement in quality of bolts and nuts, better materials, heat treatment, hot-forging processes and continuous and automatic han-

—*Wide World Photo*

Interlocking steel piling aids in taming the Colorado river at Hoover dam. It forms part of the cofferdam, driven into the river bottom, one of the details in which only steel will serve

dling have contributed much (p. 23) in the plant of an important manufacturer.

Now Strip Furnaces Instead of Ingots

To hold down their cash outlays, some producers of steel are transferring materials and equipment from idle to active plants (p. 36), one recently going to the extent of shipping open-hearth roof linings. . . . In the construction of new open hearths, the sloping back wall has so many advantages it is used universally (p. 28). For furnaces of 100 to 350 tons, constant back wall height should be maintained, the refractory materials available for this construction including ground magnesite, dolomite and fire, silica, chrome, magnesite and insulating brick.

Diet of Nitrogen Healthy for Steel

Principal benefits of nickel in nitriding steel (p. 30) are claimed to be a strengthening and toughening effect upon the nitrided case, a hardening of the core and development of dispersion-hardening phenomena in steel containing appreciable proportions of aluminum, by which an automatic increase in core strength and elastic properties is obtained during the nitriding cycle. . . . Adding nitrogen to low-carbon steel (p. 36) increases tensile strength, elastic limit and brinell hardness, but lowers the reduction of area and the elongation.

Back Claims for Welding with Tests

Supporting its advocacy of a revision of the St. Louis building code to permit fusion welding of steel structures, the welding society of that city cites tests of welds made in 32 St. Louis industrial plants (p. 31). Average tensile strength is 56,936 pounds and average elongation 28.9 per cent. . . . When completed, there will be seven miles of welding in construction of the new navy dirigible dock at Sunnyvale, Calif. (p. 32). Floors are 3/16-inch plates, 2 x 12 feet, arc welded; the unobstructed area is 1200 feet long, 308 feet wide, 225 feet high.

Patenting of Wire Permits No Deviations

Patenting of steel wire is a time-temperature process, any slight change in either condition resulting in slight differences in the product (p. 31). In drawing this wire, tungsten carbide dies are favored, their life being increased by cooling with a constant flow of water. . . . For cement-coated nails a holding power 87 to 179 per cent greater than plain wire nails is claimed (p. 26); etching the nail surface by a new chemical process is even more effective, with a gain of 91 to 207 per cent. Sand blasting is claimed to equal the chemical method.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

Are We Approaching a Labor Crisis?

To the Editor:

Your "Voice of Industry" has become a "wailing" column. The steelmaker, fabricator and engineer send up their wails, but obviously few if any of them have given the depression much real thought. Let us look things over to see if we can dispel some of the apparent fallacies that exist and propose sound recommendations for the steel industry.

Starting with financial management, let us see to it that our financial structures are kept as simple as possible and that our expansions are financed from the sale of securities, not out of profits. There is economy in this direction.

Next, we should rid ourselves of pension schemes based upon the value of men during the last decade or so of their working lives and substitute plans reflecting the value of their whole lives to the nation. The existence of a company pension scheme usually indicates a partial monopoly in a certain trade and constitutes a burden that under true individual intiative conditions could not be borne.

Further, let the steel industry prosecute research and development much more vigorously. It is very slack in this respect in spite of the fact that there is much to be gained.

Also, let us train carefully the men who enter the industry, particularly the engineers. Few engineers know the steel business thoroughly. It is a complicated business and radical changes constantly are introducing new problems.

Again, let us think carefully before introducing labor-saving machinery. Equipment that saves labor is not always profitable. I can hear you murmuring "Retrogression"; not so! I believe we can introduce labor-saving machinery so quickly as to disrupt industry and to wreck the immediate future. We do not want excessive unemployment and strikes. We shall gain nothing by either. We must have peace and a fair amount of stabilization. In addition we should remember that the closer we approach automatic operation, the more difficult it becomes to recover from depression and the larger loom communism and socialism.

It is absolutely necessary that we cut prices to the bone, and that, while developing new and better steels we shall not forget that there is a market where some of our present products are too good.

We shall come out of this depression with a big surplus of labor, which will make some of our labor-saving machinery valueless and will carry us toward a time of increased apprenticeship training in basic industries.

Assuming that I am correct in that we are approaching a labor crisis, how shall be meet it or turn it aside. We can take a lesson from the coal mining industry; it antagonized the men instead of assisting them. The result has been disaster and death, and apparently never-ending feud. Shall we follow suit? I hope not. I suggest, rather, that we realize the changes that are taking place and co-operate with new and expanding industries in an effort to make labor more mobile. We can do so through a system of bona-fide employment agencies.

By following these recommendations, I believe we can head out of this depression rapidly and stay on a firm footing. The alternative is government ownership in some form.

S. H. DAVIES

Chicago

Table II

Operating Ratios of Eleven Steel Companies—

Weighted Average, 1920-1931, Inclusive

	U. S. Steel Corp.	Five Larger Indep.	Five Smaller Indep.	Total Eleven Co's	Highest Return Company
Rated ingot capacity 1931	27.841	18.062	3.010	48.913	2.000
Total assets, million $	2390.109	1066.722	197.924	3654.755	80.763
Per cent of total assets	65.40	29.18	5.42	100.00	2.21
Percentage of sales					
Manufacturing profit	11.76	14.59	11.15	12.46	20.35
Other income	1.70	1.52	0.83	1.61	1.09
Total income	13.46	16.11	11.98	14.07	21.44
Depreciation	3.52	5.12	4.82	4.00	4.92
Other deductions	1.19	0.85	1.16	1.10	1.92
Bal. before fixed charges	8.75	10.14	6.00	8.97	14.60
Interest on funded debt	1.71	3.22	3.00	2.18	1.68
Surplus net profit	7.04	6.92	3.00	6.79	12.92
Turnover					
$ sales per $ plant and equipment	$0.792	$0.754	$0.784	$0.781	$1.001
$ sales per $ total assets	0.546	0.480	0.505	0.525	0.515
Return on investment					
Surp. net profit—% net worth	5.16	5.14	2.27	5.00	9.00
Dividends					
Per cent of surplus net profit—					
Declared as dividends	70.20	67.60	78.60	69.50	67.00
Left in business	29.80	32.40	21.40	30.50	33.00
Per cent of total assets					
As plant and equipment	69.04	63.50	64.45	67.00	51.02
Per cent of total liabilities					
As funded debt	17.20	27.80	25.90	20.80	18.90
As surplus	29.30	18.78	11.90	25.30	28.20
Depreciation and depletion					
Per cent—plant and equipment	2.78	3.85	3.78	3.13	4.97
Per cent—net worth	2.57	3.79	3.66	2.94	3.43
Per cent—sales	3.52	5.12	4.82	4.00	4.92
Per cent—net earnings before dpr.	33.30	42.50	61.70	37.10	27.70

Profits in the Steel Industry—II—Postwar Comparisons

BY EDMUND NEWTON

SINCE 1920, eleven of the largest steel companies have published the amount of their sales, either continuously, in the case of eight companies, or for the major part of the period, for the remaining three companies. The published data appearing in *Poor's* and *Moody's Manuals* have been used to construct Tables II and III. The weighted average operating ratios for the entire 12-year period are given in Table II. These data are given for the corporation alone; the five larger independent companies; the five smaller independents; the composite of the 11 companies and finally, for the company which has the highest average return of surplus net profit to net worth.

For the years that the amount of sales has not been published by the three companies, the amounts have been estimated, so that the composite ratios based on sales have been closely approximated. On account of variations in the form of company statements, it has been somewhat difficult to reconcile some items and to reduce them all to a common abbreviated form.

The relative average size of the companies in each of these three groups is clearly indicated by comparison of their total assets. The company with the highest rate of return belongs in the group of five larger independents and its results are also included in the average for that group. The amounts so put aside, expressed as percentages of earnings, before deducting depreciation and depletion amounted to about 62 per cent for the smaller independents, 43 per cent for the larger independents and 33 per cent for the corporation.

Profits in Post-War Period

The variations in the operating ratios by years are shown in Table III. The data in this table represent the weighted averages for the entire 11 companies for each year. Data are available, on which to compute the rate of operations, only since 1923.

The several changes which have taken place in the different groups and in the composite balance sheet structure of these 11 companies during the 12 years from 1920 to 1931 are shown graphically in Figs. 2 and 3. Some of these changes, however, may be due to the fact that the figures for 1920 were for the close of a boom year, while those for 1931 were for the end of a greatly depressed year.

The percentages of total assets and liabilities, for each item of a condensed balance sheet for 1920 and 1931, are shown in Fig. 2. The increase or decrease of each item of the balance sheet, between 1920 and 1931, is shown as percentages of the 1920 amounts in Fig. 3.

These two figures, considered to-

Table III

Operating Ratios of Eleven Steel Companies—by Years

	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931
Rated ingot capacity—million tons	.....	.....	.....	39.93	40.21	40.48	41.15	41.45	42.05	42.90	46.91	48.91
Actual ingot production—million tons	.....	.....	.....	32.04	26.92	31.49	34.04	31.34	35.28	38.75	29.16	18.12
Rate of operations—per cent	.....	.....	.....	80.50	67.00	78.00	82.80	75.80	83.70	90.50	62.20	37.10
Per cent of sales												
Manufacturing profit	13.52	8.45	9.24	13.40	10.75	11.99	13.62	12.30	14.08	17.40	12.45	5.00
Other income	0.21	2.69	1.73	0.23	2.46	1.41	1.29	1.64	1.57	1.87	2.18	3.90
Total income	13.73	11.14	10.97	13.63	13.21	13.40	14.91	13.94	15.65	19.27	14.63	8.90
Depreciation and depletion	2.74	3.62	3.58	3.09	3.70	3.68	3.89	4.16	4.34	4.30	5.23	7.21
Other deductions	2.84	1.37	0.94	1.44	0.81	0.93	1.58	0.91	1.11	0.74	0.10	0.01
Balance before fixed charges	8.15	6.16	6.45	9.11	8.70	8.69	9.48	8.87	10.20	14.23	9.30	1.68
Interest on funded debt	1.74	3.24	2.93	2.17	2.60	2.24	1.62	2.28	2.19	1.58	1.31	2.27
Surplus net profit	6.41	2.92	3.52	6.94	6.10	6.45	7.82	6.59	8.01	12.65	7.99	
Deficit												0.59
Tunrover												
$ sales per $ plant and equipment	1.122	0.600	0.650	0.926	0.757	0.826	0.887	0.765	0.826	0.950	0.677	0.426
Return on investment												
Surplus net profit—per cent net worth	6.98	1.73	2.28	6.42	4.59	5.26	6.81	4.90	6.34	9.85	4.67	—0.23
Depreciation and depletion												
Per cent—plant and equipment	3.14	2.15	2.32	2.82	2.80	3.03	3.45	3.19	3.59	4.10	3.54	3.08
Per cent—sales	2.74	3.62	3.58	3.09	3.70	3.68	3.89	4.16	4.34	4.30	5.23	7.21
Per cent—net earnings before depreciation	30.40	54.95	50.00	30.05	37.80	36.25	32.25	38.80	35.45	26.40	39.60	109.00

Table IV

Financial and Operating Ratios of Representative Industries 1927-1930

Based on data compiled by Standard Statistics Co. Inc. Averages for 1927-1930 inclusive, weighted for 476 corporations in 50 subdivisions of manufacturing

	Industries With Higher Yield	Steel Industry	Industries With Lower Yield	Grand Total
Number of industries	37	1	12	50
Number of corporations	378	24	74	476
Total assets—million $	24,622.63	4,245.12	3,946.30	32,814.05
Per cent of total assets	75.07	12.90	12.03	100.00
Per cent of gross income				
Balance before fixed charges	9.72	10.55	2.37	8.47
Fixed charges	0.57	1.39	1.10	0.75
Surplus net profits	9.15	9.16	1.27	7.72
Turnovers				
Gross income—per $ plant	$2.053	$0.841	$2.990	$1.956
—Per $ total fixed assets	1.570	0.760	2.420	1.544
—Per $ total assets	0.959	0.562	1.462	0.968
Return on investment				
Surplus net profit on net worth	10.80	6.62	2.77	9.45
Earnings on total inv. capital	10.36	6.33	3.84	9.01
Dividends				
Per cent div. to surp. net profit	69.40	62.15	113.95	70.00
Per cent left in business	30.60	37.85	Def. 13.95	30.00
Current asset ratio	4.92	5.13	4.67	4.89
How capital is invested—%				
Plant and equipment	46.87	66.60	49.00	49.55
Investments—long term	9.27	5.03	5.30	8.25
Intangibles	3.29	0.32	4.34	3.03
Other fixed assets	1.77	1.81	1.83	1.79
Current assets—total	38.80	26.24	39.53	37.38
Total	100.00	100.00	100.00	100.00
Distribution of current assets				
Cash or equivalent	32.00	33.95	18.10	30.20
Receivables	22.50	18.20	30.80	23.30
Inventory	45.50	47.85	51.10	46.50
Total	100.00	100.00	100.00	100.00
Source of capital				
Preferred stock	9.54	14.55	16.92	11.40
Common stock and surplus	69.80	59.20	48.40	65.50
Capital reserves	1.96	4.09	1.14	2.14
Net worth	81.30	77.84	66.46	79.04
Funded debt	8.74	15.85	23.75	11.50
Total invested capital	90.04	93.69	90.21	90.54
Other fixed liabilities	2.05	1.21	1.33	1.86
Current liabilities—total	7.91	5.10	8.46	7.60
Total	100.00	100.00	100.00	100.00
Per cent funded debt to plant	18.65	23.80	48.50	23.20
Per cent depreciation and depletion				
To gross income	3.86	4.26	1.41	3.40
To plant and equipment	7.90	3.58	4.24	6.65

gether, reflect the important changes which have taken place in the balance sheet structure of the several groups, during this period.

Probably the most significant change in the balance sheet structure of these 11 companies, has been the relatively large increase in plant and equipment for the five larger independents. This is apparently largely represented by increased finishing mill capacity.

From 1920 to 1931 inclusive, the 11 companies increased their ingot capacity from 39,191,000 to 48,913,000 annual tons, an increase of 9,722,000 annual tons, or by approximately 25 per cent of their 1920 figure. The corporation accounted for 5,041,000 tons of this increase; the five larger independents for 4,317,000 tons and the five smaller independents for only 364,000 annual tons. The five larger independents in 1920, had net plant and equipment amounting to $28.30 per annual ton of ingot capacity, while the expenditure for plant and equipment between 1920 and 1931 amounted to $117.10 per ton of annual ingot capacity added. The five smaller independents in 1920 had net plant and equipment amounting to $41.50 per annual ton of ingot capacity, and their additions to the net plant account amounted to $92.60 per annual ton of ingot capacity added. These figures would indicate that these additions to plant and equipment included a relatively large proportion of finishing mill capacity.

In order to serve as a background for comparing recent profits in the

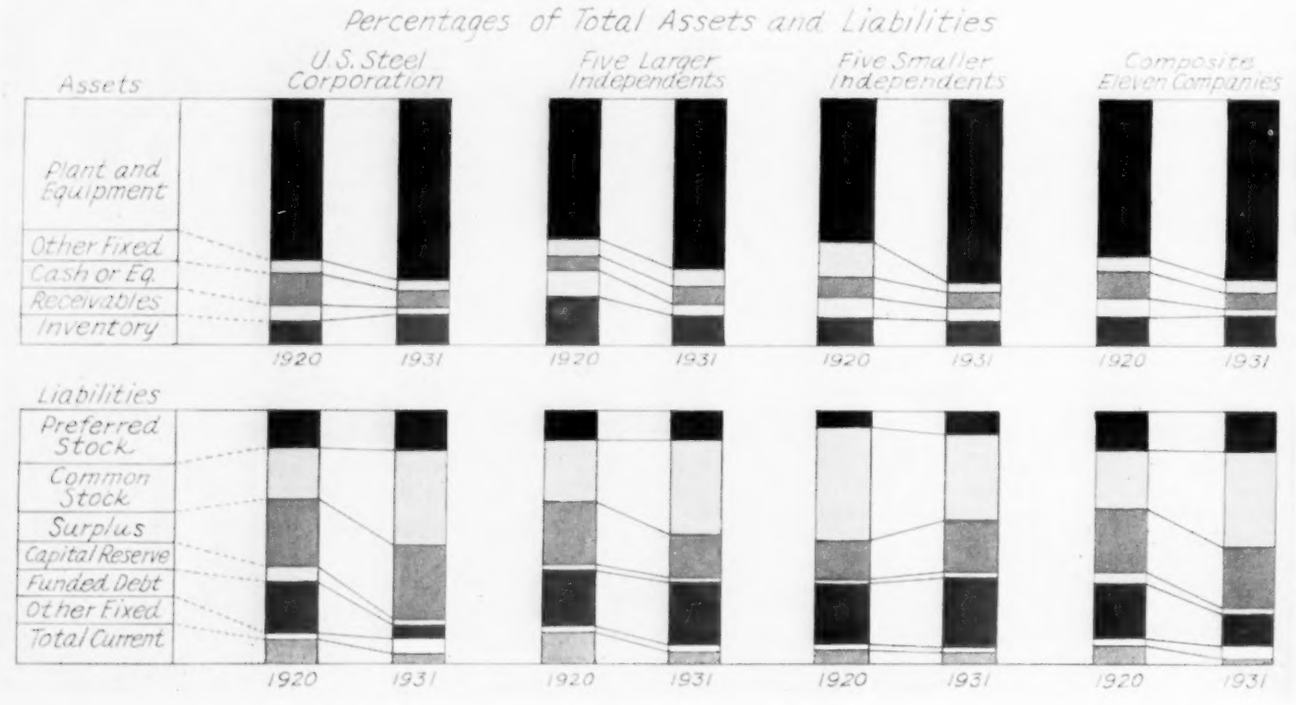

Fig. 2—Balance sheet structure at end of 1920 and 1931

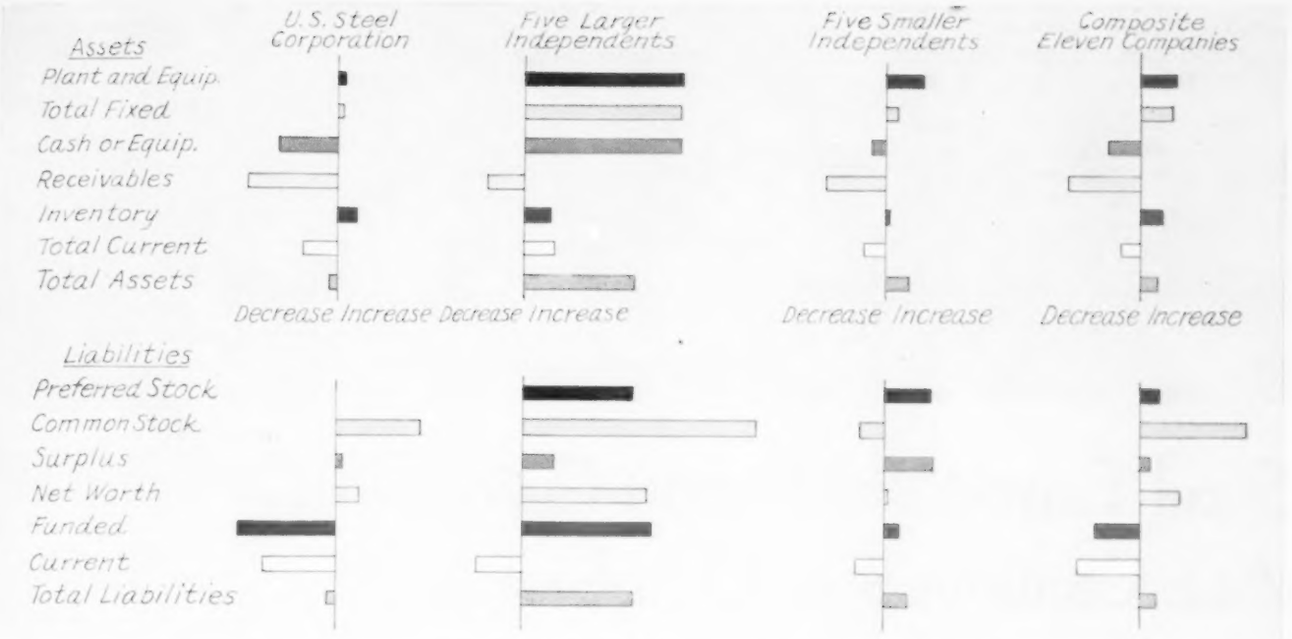

Fig. 3—Changes in balance sheet structure between 1920 and 1930. Each item is expressed as a percentage of 1920 amounts

steel industry with those of other industries, Table IV has been prepared. This table is based upon data compiled by the Standard Statistics Company, Inc., for the years 1927 to 1930 inclusive, and covers the essential operating and balance sheet data for 483 representative corporations in 53 sub-divisions of industry. While the period is relatitvely short, it may well be taken as representing somewhat above normal activity for the 10 years preceding 1931. The following figures indicate the relative rates of production during the last four years of this period compared with those for the entire 10 years. These figures have been taken from the federal reserve board indexes of manufacturing production, in which the average for the years 1923-1925 has been taken as the base, or 100:

Year	All Manufactures	Iron and Steel
1921	67	46
1922	87	82
1923	101	105
1924	94	89
1925	105	106
1926	108	113
1927	106	104
1928	112	119
1929	119	130
1930	96	95
Ave., 1921-30, inc.	99.5	98.9
Ave., 1927-30, inc.	108.2	112.0

In developing the several ratios shown in Table IV, the weighted average of the four years for all of the corporations in each subdivision of industry has been used. Gross income, as termed by the Standard Statistics Co., includes other income, as well as that from manufacture. This item was reported by 251 corporations of the entire group of 483, or 52 per cent.

(*Please Turn to Page* 52)

I. C. C. Is Mild on Reciprocal Buying; Labor Fights Sales Tax; Washington News

WASHINGTON — Interstate commerce commission, concluding its investigation of the matter of reciprocity in purchasing and routing by the railroads, is taking no action other than giving carriers and shippers an opportunity to correct their present practices.

The commission recommends that "further consideration of the desirability of legislation requiring that purchases of materials and supplies be made on competitive bids be deferred."

The commission finds that the purchasing of commodities by the railroads is effectively influenced by "actual or threatened diversion of traffic" and that "carriers by railroad generally follow the practice of making purchases from manufacturers and dealers in return for traffic routed or to be routed via their respective lines."

The commission in its decision has the following to say relative to purchases of rail and related parts:

"Expenditures for steel rail and for frogs, switches, crossings, and track fastenings of Class I carriers, during 1929, amounted to $165,166,000, or 12.42 per cent of the total expenditures for fuel, materials and supplies.

"As contrasted with purchases of fuel and certain other commodities, with respect to which the carriers to a large extent fix the price they will pay, the carriers in purchasing steel rails and related parts apparently have little or nothing to say about the price they pay.

"The manufacture of rails and related parts is confined to relatively few concerns, and the price is practically uniform. Competitive bidding is of little consequence as to these materials, and purchases from different mills are prorated to a large extent according to commercial traffic of the various mills which is routed via the purchasing carrier's line."

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The pool whereby the surcharges collected on freight rates beginning Jan. 4 were re-distributed to roads in serious financial distress is being broken up, it is understood, and the surcharges collected by the respective roads will be retained by them.

In the interstate commerce commission decision, granting the surcharges, which expire next March 32, it was recommended that the railroads pool the additional revenue, which is estimated will total about $60,000,000 for 1932.

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Reconstruction Finance Corp. has authorized a loan of $600,000 to the Tampa-Clearwater Bridge Co., Tampa, Fla., for erection of a toll bridge estimated to require 200 tons of structural and reinforcing steel.

A loan of $80,000 to the Denville, N. J., waterworks will release 930 tons of cast iron pipe.

Of a loan of $35,000 to the Kenton

county, Kentucky, waterworks, it is estimated that $25,000 will be expended for cast iron and steel for a storage tank.

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William Green, president, American Federation of Labor, has announced that "it is the purpose and intention of the Federation to oppose the enactment of sales tax legislation during the short session of congress which meets Dec. 5."

"Labor views with feelings of deep apprehension," says President Green, "the attempt of the advocates of sales tax legislation to transfer the burden of taxation from the wealth of the nation to the masses of the people.

"Having consistently held that sales tax legislation is unAmerican, and inconsistent with our democratic form of government, the Federation will make sales tax legislation an issue to be determined by a record vote of the members of congress."

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The six tariff commission experts doing field work in New Jersey, Alabama and Virginia in connection with the cast iron pipe tariff investigation have returned to Washington. The foreign field work has not yet been reached and no date for it set.

Steel Export and Import Gains Are Continued in October

FOR the second consecutive month, imports and exports of steel and iron gained in October, according to figures compiled by the iron and steel division of the department of commerce.

Exports rose from 36,038 tons in September to 41,226 tons in October and imports from 29,241 tons in September to 33,693 tons in October. Exports moved 5188 tons from September to October, compared with 3038 tons from August to September. Imports rose 4432 tons in October, against 5618 tons in September.

Total exports for ten months of 1932 were 484,532 tons, compared with 852,177 tons in the comparable period of 1931. Imports for the same period were 313,968 tons in 1932 and 360,643 tons in 1931.

The greatest export gain in October was in scrap, which totaled 10,004 tons, compared with 5995 tons in September. Skelp exports increased from 212 tons to 4224 tons, and cast iron pipe from 336 tons to 1097 tons. Tin plate exports dropped from 5100 tons to 3659 tons and black sheets from 3440 tons to 2083 tons.

The heavy gain in imports was in pig iron, which increased from 7250 tons in September to 17,286 tons in October. Concrete bars increased from 1171 tons to 1669 tons and sheets and skelp from 1817 tons to 2313 tons. Imports of structural shapes declined from 3109 tons to 2475 tons and steel rails from 2524 tons to 119 tons.

The Netherlands sent the largest tonnage into the United States, 14,210 tons, compared with 6062 tons in September. Belgium was second in imports to this country, with 8007 tons, compared with 6687 tons in September. Canada sent 3088 tons, compared with 7605 tons in September, a sharp decline. Imports from other countries were only slightly different from the preceding month.

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

Gross Tons

	1932		1931	
	Imports	Exports	Imports	Exports
Jan.	31,053	40,660	41,628	92,719
Feb.	26,738	40,492	28,045	91,161
March	41,031	49,927	40,402	109,324
April	36,339	58,118	47,872	101,434
May	39,751	80,477	37,176	95,046
June	34,494	52,081	37,819	75,577
July	18,005	52,558	37,190	84,465
Aug.	23,623	32,955	30,139	73,338
Sept.	29,241	36,038	30,966	69,778
Oct.	33,693	41,226	29,401	59,335
10 mo.	313,968	484,532	360,643	852,177
Nov.	.....	.....	34,658	59,556
Dec.	.....	.....	25,812	57,263
Total	.....	.....	421,108	968,996

ORIGIN OF OCTOBER IMPORTS

Gross Tons

	Iron ore	Pig iron	Manganese ore	Ferro-manganese
Germany	150	100	.....	.....
Norway	7,172	.....	.....	422
United Kingdom	81	.....	.....	2
Soviet Russia	8,600	.....	.....	.....
Netherlands	.....	14,095	.....	.....
Sweden	.....	25	.....	.....
Canada	.....	1,815	.....	875
British India	.....	1,251	.....	.....
Total	16,003	17,286	.....	1,299

	Steel ingots	Steel scrap	Steel bars	Cast iron pipe
Belgium	4	.....	1,660	.....
Canada	1	136	.....	.....
United Kingdom	1	.....	11	.....
Germany	11	.....	56	.....
Sweden	12	.....	46	.....
France	.....	.....	331	.....
Austria	.....	.....	3	.....
Czechoslovakia	.....	.....	5	.....
Total	29	136	2,112	.....

IMPORTS OF IRON AND STEEL PRODUCTS INTO THE UNITED STATES

Gross Tons

Items	Oct., 1932	Sept., 1932	Oct., 1931
Pig iron	17,286	7,250	4,413
Sponge iron	51	6	.....
Ferromanganese, spiegeleisen (1)	1,299	1,163	873
Ferrochrome (2)	17	.....	.....
Ferrosilicon (3)	4	.....	23
Other ferroalloys	1	.....	25
Scrap	136	4,390	1,046
Steel ingots, blooms, billets, etc.	29	91	750
Concrete bars, etc.	1,669	1,181	3,411
Hollow bar, drill steel	34	125	117
Merchant steel bars	2,114	1,193	5,344
Iron slabs	.....	.....	.....
Iron bars	6	38	18
Wire rods	403	862	250
Boiler, other plate	32	33	2
Sheets, skelp, saw plate	2,313	1,817	440
Tin plate	10	5	2
Structural shapes	2,475	3,109	6,416
Sheet piling	.....	.....	338
Rails, rail fastenings	119	2,524	198
Cast iron pipe, fittings	.....	.....	125
Welded pipe	195	239	290
Other pipe	157	190	445
Barbed wire	949	748	513
Round iron, steel wire	150	107	140
Telephone, telegraph wire	.....	.....	14
Flat wire, strip steel	77	88	64
Wire rope, strand	175	143	197
Other wire	109	48	42
Hoops, bands	2,904	3,062	3,106
Nails, tacks, staples	862	762	604
Bolts, nuts, rivets	41	12	67
Horse, mule shoes	31	26	.....
Castings, forgings	45	29	133
Total	33,693	29,241	29,406

(1) Manganese content.
(2) Chromium content.
(3) Silicon content.

EXPORTS OF IRON AND STEEL PRODUCTS FROM THE UNITED STATES

Gross Tons

Item	Oct., 1932	Sept., 1932	Oct., 1931
Pig iron	175	54	456
Ferromanganese, spiegel	2	6	8
Iron, steel scrap	10,004	5,995	13,512
Ingots, blooms, billets, slabs, sheet bars	180	143	113
Iron bars	35	28	35
Steel bars	1,040	978	3,653
Alloy steel bars	128	72	125
Wire rods	1,123	2,313	1,621
Boiler, other plates	663	442	1,845
Skelp, iron or steel	4,224	212	4,089
Iron sheets, galv.	105	139	210
Steel sheets, galv.	3,904	1,964	3,242
Steel sheets, black	2,083	3,449	4,687
Iron sheets, black	135	160	195
Hoops, bands, strip steel	1,161	1,043	1,891
Tin plate, terne plate	3,659	5,100	6,138
Water, oil, gas and other tanks, except lined, etc.	199	336	512
Shapes, not fabricated	704	993	3,605
Shapes, plates, fabricated	516	413	426
Metal lath	44	72	168
Frames, sashes, sheet piling	666	1,096	53
Rails	355	864	888
Rail fastenings	177	192	377
Boiler tubes, seamless and welded	289	231	549
Casing and oil-line pipe	1,281	2,193	407
Seamless black pipe, other than casing (1)	36	28	.....
Malleable-iron screwed pipe fittings	132	141	241
Cast-iron screwed pipe fittings	101	40	55
Cast-iron pressure pipe and fittings	1,097	336	425
Cast-iron soil pipe and fittings	70	119	57
Welded black and galvanized steel pipe	2,413	2,868	4,064
Welded black and galvanized wrought-iron pipe	83	341	189
Riveted pipe, fittings (1)	4	1	.....
Plain black or galvanized iron or steel wire	571	491	1,221
Barbed wire and woven-wire fencing	1,500	1,367	1,134
Woven-wire screen cloth	53	44	54
Wire rope	198	104	189
Insulated iron or steel wire and cable	5	4	35
Other wire and manufactures	109	128	273
Wire nails	365	456	934
Tacks	20	23	50
Other nails, staples	176	188	237
Bolts, machine screws, nuts, rivets, washers	199	223	328
Iron castings	650	200	274
Steel castings	44	52	157
Car wheels and axles	295	69	264
Horseshoes	20	3	13
Forgings	233	324	336
Total	41,226	36,038	59,335

(1) Not shown prior to 1932.

MIRRORS OF MOTORDOM

DETROIT

IT NOW being a certainty that automobile production in 1932 will fall short of the 1,500,000 units so generally predicted, Detroit is inclined to paint the picture as black as possible on the theory that the worse is the showing this year the better next year must be.

In ten months, 1,207,000 passenger cars and trucks have been assembled in the United States. November and December combined will turn in 125,000 to 150,000 units, making 1932 about a 1,350,000-unit year.

This is a new low record. The down trend of production is from 5,358,420 units in 1929 to 3,355,986 in 1930 to 2,389,730 in 1931 to 1,350,000 in 1932. Not until July, 1921, did Washington begin compiling production statistics, but in the last half of that depression year output was 861,008, compared with an estimated 481,000 for last half of 1932.

Obviously, the deficiency in new transportation is enormous. Assemblies in 1930 and 1931 combined topped 1929 by only 5 per cent; 1931 and 1932 together equal only 70 per cent of 1929. In 1930, 1931 and including all of 1932, only 7,100,000 cars and trucks have been made, compared with 12,061,019 in three years preceding 1929.

This deficiency, Detroit concedes, might not be worn down appreciably in 1933. Thousands have learned that the life of an automobile is amazingly longer than they thought, the thrift forced upon the country this year will not vanish over night, it is conceivable that three years may not be sufficient to purge the country economically.

But Detroit is developing an underlying confidence that the purchasing power of the country will begin to return in 1933, and that the automobile industry will be early in benefiting. Typical is the attitude of the president of what might be termed a supply interest. He forecasts that 1933 will be a moderately good year, but that motor stocks will not be a buy until the fall of 1933 in anticipation of a whopping big 1934.

There is considerable opinion that the next six months will determine the struggle for position, and the existence of some companies. Of the three largest producing units, General Motors in 1932 maintained its position, Ford has lost ground, Chrysler has made strides. This is shown by the following comparison of registrations of principal groups by *Automobile Topics*:

	9 mos., 1932 Units Registered	9 mos., 1932 % of Grand Total	9 mos., 1931 Units Registered	9 mos., 1931 % of Grand Total
General Motors	405,637	42.9	712,306	43.1
Ford	214,287	22.7	473,863	28.7
Chrysler	160,660	17.1	187,994	11.4
Studebaker	38,282	4.1	42,153	2.5
Hudson	31,774	3.4	55,491	3.4
Willys	22,461	2.4	43,235	2.6
Cord	10,955	1.2	28,070	1.7
Total of groups	884,056	93.8	1,543,112	93.4
Total for industry	943,163		1,652,099	

General Motors includes Chevrolet, Pontiac, Buick, Oldsmobile, Cadillac and LaSalle; Ford also includes Lincoln; Chrysler includes Plymouth, DeSoto and Dodge; Studebaker also includes Rockne and Pierce-Arrow; Hudson also includes Essex; Cord includes Auburn.

By individual makes, registrations in the third quarter of 1932 and in the first nine months of 1932 and 1931 compare as follows:

	3d Quar. 1932	9 Mos. 1932	9 Mos. 1931
Ford	97,502	211,715	470,872
Chevrolet	70,719	289,991	504,902
Plymouth	28,121	91,094	70,387
Pontiac	9,163	41,838	76,156*
Essex	8,507	23,887	38,267
Buick	8,207	44,095	74,343
DeSoto	5,343	22,641	23,963
Chrysler	5,311	23,400	46,301
Rockne	5,293	13,882	.....†
Willys-Overland	5,173	19,337	36,065
Dodge	4,794	23,525	47,343
Studebaker	4,529	22,174	38,355
Oldsmobile	4,492	21,055	41,961
Auburn	3,771	10,638	26,872
Hudson	1,314	7,887	17,224
Cadillac	989	5,481	9,199
LaSalle	745	3,177	5,745

*Includes Oakland, now discontinued.

†Not available for nine months.

Buick, which will present its new models about Dec. 3, has gone radical in redesigning its fenders but remains conservative in the matter of the radiator shell. Front and rear fenders feature the drop first introduced by Graham and since adopted by Plymouth, masking the under gear. On the front fenders there is a slight rise in the bottom line, beginning with the front end of the running board.

There is no pronounced slant from top to bottom in the radiator shell, which is distinctive in that the cellular effect is retained, and the vertical fins which have become so widely adopted are not a feature. The shell is of the V-type, with a center vertical strip and in many ways is reminiscent of the former Oakland.

Viewed from the front, Buick fenders are of the so-called air-wing type, coming down farther on the tire than any previous Buick design. Headlights are of the bullet type, with a distinctly longer draw to the shell. Mounted below each headlight, on most models, are the new type exposed horns. Bullet parking lights are mounted in the centers of the front fenders.

Fenders, both front and rear, are pronouncedly convex and of the single-bar type. A metal strip divides front windows, which are featured in Fisher Body advertising as affording individual ventilation, one-half raising and lowering and the other pivoting. Wheels are of the large-spoke, large-hub steel type.

Instead of assembling 10,000 units between now and Jan. 1, Buick will produce only 7000. Its tentative schedule for 1933 is about 55,000, but this of course is subject to revision as the market situation becomes clarified.

Chevrolet, which may introduce its new models in the week beginning Dec. 5, has covered on the remain-

(Concluded on Page 46)

Industrial Men in the Day's News

Charles F. Blackmer, President, American Steel & Wire Co.

IN his new post he is successor to John S. Keefe, now retiring, and second in line after William P. Palmer.

THIRTY-FOUR years he has been with the American company, starting in the Washburn & Moen laboratory at Waukegan, Ill.

UNDER his direction the wire mills of the Minnesota Steel Co. at Duluth were built, and now he again directs them.

CHARLES F. BLACKMER, vice president in charge of operations of the American Steel & Wire Co., Cleveland, becomes president of the company Jan. 1, in succession to John S. Keefe, president since Dec. 28, 1927.

Mr. Keefe, who is rapidly approaching the compulsory retirement age of the United States Steel Corp., of which the American company is a subsidiary, has been identified with the Corporation or a component company since 1888. In 1899 he was made general traffic manager of the American company, becoming first vice president in 1901 and president in 1927, following the death of William P. Palmer.

Mr. Blackmer was born in Worcester, Mass., April 1, 1879, going at the age of eight with his parents to Colorado Springs, Colo., and remaining there until 1898. In that year he became assistant in the laboratory at Waukegan, Ill., of the Washburn & Moen Wire Co. When in 1899 the Washburn & Moen company was acquired by the American company, Mr. Blackmer was a foreman in the wire-drawing department of the Waukegan plant.

In March, 1912, he was made assistant superintendent of the Waukegan Works. The Minnesota Steel Co. being projected by the Steel corporation, he was assigned to Duluth to design and put in operation the wire mills there, being made superintendent in June, 1921. The Minnesota company is now being managed by the American company.

Managership of the Pittsburgh district of the American company was tendered to him in March, 1925. In that capacity he served until December, 1927, when he was made general superintendent of all the company's mills, with headquarters at Cleveland. In April, 1930, he was made a vice president in charge of operations, a post which he filled until his succession to the presidency of the company.

WALTER F. PERKINS, manager of the Harrison, N. J., works of the Worthington Pump & Machinery Corp. since 1927, has resigned to become vice president and general manager of the Bartlett Hayward Co., Baltimore, effective Dec. 1. Mr. Perkins was associated with the latter company from 1914 to 1927, is a native of Baltimore and a graduate of Baltimore Polytechnic institute, 1909, and Lehigh university, 1913.

Hugh Benet, formerly manager of the Holyoke, Mass., works of the Worthington corporation succeeds Mr. Perkins as works manager at Harrison, as noted in STEEL Nov. 21.

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John H. Romann, for the past seven years general superintendent of the Ewald Iron Co., Louisville, Ky., has been appointed general manager. Prior to his association with the Ewald company, which has manufactured staybolt and enginebolt iron since 1884, Mr. Romann was with the Illinois Steel Co., American Steel Foundries, and was technical adviser in Europe for Joseph T. Ryerson & Son Inc.

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E. P. Rankin Jr., structural engineer, formerly with the El Paso Bridge & Iron Co., El Paso, Tex., is now located in Monrovia, Calif.

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Fred H. Dorner, mechanical engineer, Milwaukee, and vice president of the American Society of Mechanical Engineers, has been appointed alumni representative on the board of visitors of the University of Wisconsin.

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A. D. Peabody, formerly division manager of the Westinghouse Electric Supply Co. of Texas and Oklahoma, has been appointed district merchandising manager of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

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J. H. Wood, formerly sales engineer for the Baldwin-Southwark Corp., Philadelphia, has been appointed eastern sales manager, at Haddonfield, N. J., for the Lake Erie Engineering Corp., Buffalo.

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Gen. Thomas S. Hammond, president of the Whiting Corp., Harvey, Ill., has been nominated for the

presidency of the Illinois Manufacturers' association. His election will take place at the organization's annual meeting on Dec. 13.

A. J. McKay, of the Matthiessen & Hegeler Zinc Co., has been nominated for first vice president.

October Employment and Payroll Indexes Higher

Washington—Further gains for iron and steel employment are shown by the bureau of labor statistics' index figures for October. For iron and steel manufacture the increase was from 51.3 in September, to 53 in October. For the iron and steel industry and its products, as a group, the increment was from 51.8 to 53.1. For machine tool manufacture, which the bureau does not include in the group, the October index was down to 29.6, compared with 30.2 for September. Employment in structural steel fabricating shops declined from an index of 42.7 in September to 41.2 in October. The cast iron pipe industry increased from 28.1 to 29.6.

The payroll index for the iron and steel industry and products moved up from 51.8 to 53.1. The two indexes are based on 1926 as 100.

Founders Urge Economy in Gov't. To Speed Recovery

Closing its thirty-sixth annual convention at New York, Nov. 17, the National Founders association adopted a resolution calling for immediate reduction of salaries of public officials, abandonment of unessential boards and departments in federal, state and local governments, reorganization of county government in all states, systemization and centralization of all governmental activities, and a reduction in taxation as essential to restoration of purchasing power and recovery of business.

To Discuss Mine Equipment

General industrial stabilization and the use of more and better mining machinery will be important topics at the thirty-fifth annual meeting of the American Mining congress, in Washington, Dec. 15-17, called by S. Livingston Mather, president.

Canadian Pacific Hires 8000

Canadian Pacific railway, Nov. 23, reopened many of its shops in Canada, returning 4000 men in the Angus shops at Montreal, Que., and the remainder at McAdam, N. B., Carleton Place, North Bay, Winnipeg, Calgary and Vancouver.

Obituaries

CHARLES ROBB HOUSTON, 82, organizer of the Houston, Stanwood & Gable Co., manufacturer of steam engines and boilers, died Nov. 21 at Cincinnati. He was the active head of the company, which maintained shops at Covington, Ky., for 30 years and more recently was affiliated with a real estate firm. George H. Houston, president of the Baldwin Locomotive Works, Philadelphia, is a son.

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Daniel S. Haviland, secretary, Universal Boring Machine Co., Hudson, Mass., died Nov. 17.

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Edward W. Burton, 51, assistant mechanical engineer, Allis Chalmers Mfg. Co., Milwaukee, died Nov. 21.

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John H. Burns, 56, vice president and general manager of McCarthy Bros. & Ford, Buffalo, died Nov. 23.

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Charles H. Munford, 93, oldest living stockholder of the United States Steel Corp. (STEEL, Nov. 14, p. 13), died at Newark, N. J., Nov. 23.

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Frank A. Williams, 63, who with W. J. Wallis in 1890 founded the Girard Foundry & Machine Co., Girard, O., and later moved it to Youngstown, O., as the Youngstown Foundry & Machine Co., died Nov. 21.

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T. A. Kiley, chief clerk and paymaster of the Frank Kneeland plant of the United Engineering & Foundry Co., Pittsburgh, died at Pittsburgh Nov. 21. He had been identified with the company for 35 years.

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Edgar J. Tapping, 69, for 35 years general manager of the Milwaukee division of the American McKenna Process Co., died Nov. 15. He was born in New Brunswick, N. J., and had resided in Milwaukee since 1885.

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David J. Davis, 63, secretary and treasurer of the Amalgamated Association of Iron, Steel and Tin Workers, Pittsburgh, died at Pittsburgh, Nov. 18. Mr. Davis was a native of England but had spent most of his life in this country in the early iron industry, in the mills and later in official union capacities.

Fight Rise in Sand Rates

Consumers of molding, core, high silica and other sand and clay, flint and tripoli in territory east of the Mississippi river and north of the Ohio and Potomac rivers are holding conferences preliminary to petitioning the interstate commerce commission to reopen the so-called industrial sand cases. Unless revised, substantial increases in freight rates, in some cases a doubling of them, will become effective Feb. 1.

Sees Steel Gain Exceeding That of General Business

Any improvement in general conditions will be coupled with a substantially greater rate of improvement in steel production, D. H. McDougall, president, told the annual meeting of shareholders of the MacKinnon Steel Corp., Montreal, Que. Directors were re-elected without change. The president stated:

"Operations in structural steel everywhere throughout the world, with the exception of Russia, were very much restricted during the year and followed closely or were even more restricted relatively than those of the parent operation—the basic steel industry. The industry, however, has experienced many depressions and in the past has always emerged with renewed vitality. I see no reason why history should not repeat itself."

New England Roads Would Charge for Use of Cranes

A hearing will be held at the South Station, Boston, Dec. 20, on the proposal docketed by the New England Freight association for a charge of 2.5c per 100 pounds on freight handled at railroad stations in New England where cranes or derricks operated by power other than hand are furnished by the carrier for loading and unloading.

This rate would be subject to a minimum charge of $5 per shipment, and the shipper or consignee required to supply labor for attaching and detaching tackle from the freight. On structural steel and other steel products 50 cents a ton additional would accrue on carload shipments.

Importers Fight N. Y. Ban

National Council of Importers and Traders Inc., New York, is protesting the action of the New York board of estimate in barring the use of foreign iron and steel on city contracts to Dec. 31, 1933. Importers claim that the ban will aggravate unemployment in the Port of New York.

Fabricates Shops for Dam

Midwest Steel & Iron Co., Denver, will fabricate an order placed by the Babcock & Wilcox Co. for the Hoover dam project. The Midwest contract is for $100,000 for shops at the dam.

EDITORIAL

Balancing Fact and Fancy in Convention Programs

UNUSUAL and ingenious among the features of the autumn convention season was the industrial drama, "The Prosperity Process," enacted before a packed house of 2500 guests at the thirty-third annual meeting of the International Acetylene association, held recently in Philadelphia.

As outlined in last week's issue of STEEL, this industrial play deals with the experience of a typical manufacturing company during the present depression. For three years it has managed to continue in existence, although it has booked scarcely any business worth mentioning. Then suddenly, out of a clear sky, it receives an order for 10,000 parts for an air conditioning system.

Naturally the management is elated over the booking of this order. However, its joy is short lived because when the problem of arranging a schedule for production is approached, it is found the equipment and plant are in such a run-down condition that efficient operation and delivery within the time limit specified in the contract are almost impossible.

Well Written Play Enables Industry To Put Over Educational Message Effectively

Here is a crisis calling for a miracle. Perhaps the situation, as developed by the amateur but capable actors at the Penn Athletic club, lacked some of the elements of heartrending suspense and melodramatic quality that were associated with the 10-20-30 thrillers of our youth; nevertheless it carried the conviction of realism to the industrial-minded audience.

The hero, of course, is the oxyacetylene process. Its magic is invoked by the management of the company, not only to repair its down-at-the-heels equipment with minimum expense, but also as a production tool for the mass manufacture of the 10,000 parts. The order is executed so satisfactorily that the company receives a repeat order for an even larger number of parts. And as the curtain falls on the third and final act, it is evident to all that the company, like the principals in any good melodrama, is to "live happily ever after."

An industrial drama still is a rare novelty in the United States. Only at infrequent intervals have industries resorted to the use of the stage to get over ideas concerning their business. A few years ago textile interests presented shows in the principal cities to illustrate the advantages of silk and wool. With the exception of these and a few other productions of similar character, the application of the drama to industrial plots has been confined to "company" plays, in which employes have participated—usually to promote the idea of safety in industrial operations. Of course the use of moving pictures for industrial themes should be mentioned, but this is a different medium and one not pertinent to the present discussion.

Use of Drama Will Help To Balance Programs of Annual Conventions

We believe that well written and well executed plays like "The Prosperity Process" have merit that should commend them to trade and industrial associations. Many of the individuals who attended the convention of the Acetylene association will agree that the play afforded a welcome diversion from the regular program, that it was educational in character and that it put over definite ideas regarding the use of the oxyacetylene process more effectively than if they had been presented in the usual form of technical papers. Moreover, viewed from the standpoint of entertainment, a play of this kind has far greater appeal than many of the features that ordinarily grace the program of entertainment provided at conventions.

The annual meeting or convention has become a strongly entrenched institution among American industries. Considering the amount of time and money devoted to conventions, it would seem that unusual care should be taken to insure well balanced programs. While it may be granted that the average quality of annual meeting offerings today is noticeably higher than it was a decade ago, there still is room for improvement.

In recent years the tendency toward improvement of technical discussion has been marked. Round table sessions have gained in popularity, due largely to the freedom for informal debate which they afford. But with this single exception, little has been done to relieve the monotony of programs consisting in numerous instances of from 50 to more than 100 technical papers. The typical convention program, even though it may be of high quality, is too "heavy." There is too much meat and not enough salad and dessert.

A few industrial dramas scattered throughout the annual conventions of 1933 would go a long way toward restoring balance to top-heavy programs. Their novelty would appeal to thousands who have tired of the monotony of ordinary technical sessions.

THE INDUSTRIAL DIAL

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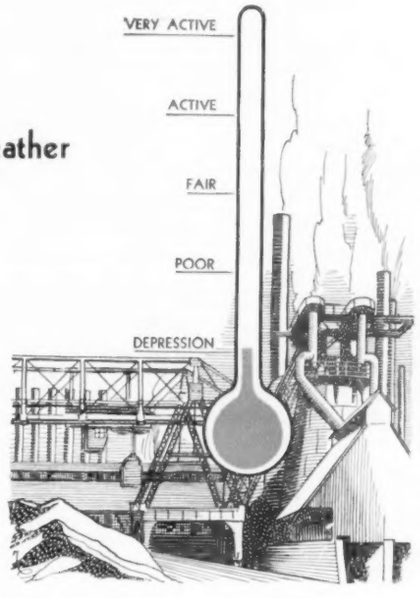
BUSINESS in November has displayed many signs of seasonal dullness, which is normally characteristic of the closing months of the year. Reviewing the trend since midsummer, it is clear that the low point in activity occurred in July or August, that substantial gains were made in September, that considerably smaller gains were recorded in October, and that November probably will show a slightly lower volume than the preceding month.

To what extent the political situation entered into the slowing down of business in October is not easily determined. Many economists think that the presidential campaign had the effect of causing some business managements to defer action on orders. It seems reasonable to believe that if this had not been an election year, the momentum so closely evident in September and early October would have carried business along into November before seasonal influences began to show the pace.

Industrial Weather



TREND:

Slightly Upward

Resist Year End Softness

Now the question is to what degree the expected year-end let down will erase the gains of the fall. On the basis of present indications, the seasonal easing of business should not be as pronounced as last year. The financial strain that was prevalent a year ago has been relieved. The pressure for retrenchment is not as great as it was. Commodity prices, while still uncertain, have retained part of the gains made since last July.

These and other factors give business a stamina which should resist further marked decline. Car loadings have been tapering off since mid-October, but the seasonal decline this year has not been as sharp as in the preceding three years. Soft coal production now is almost on a par with that of the corresponding period of 1931. Foreign trade exhibited a sharp rise in October. The automobile industry is enjoying a moment of encouraging activity. Railroad earnings in September reflected the better volume of traffic in that month. Steelmaking operations are clinging tenaciously to a range from 18 to 20 per cent.

Watch Influence of Congress

The determining factor in the business trend is confidence, which reacts to minor as well as major influences. For this reason the international debt problem and the numerous questions to be considered by the lame-duck congress are significant from the business standpoint.

Where Business Stands

Monthly Average, 1931 = 100

	Oct., 1932	Sept., 1932	Oct., 1931
Steel Ingot Output	51.3	46.8	73.7
Pig Iron Output	41.6	39.5	75.6
Freight Movement	88.2	77.8	106.5
Building Construction	.....	44.3	100.7
Automobile Output	24.4	42.0	39.6
Wholesale Prices	79.6	83.1	92.4

Business Trend Charts of the Month

Production

Steel operations ..... Nov. 7, p. 19
Blast furnace production rate ..... Nov. 14, p. 20
Steel ingot production ..... Nov. 21, p. 22
Pig iron production ..... Nov. 14, p. 20
Industrial production ..... Nov. 7, p. 21

Demand

Unfilled orders, U. S. Steel Corp. ..... Nov. 21, p. 22
Railroad car orders ..... Nov. 14, p. 20
Index of machine tool orders Nov. 7, p. 20; Nov. 28, p. 21
Building construction ..... Nov. 7, p. 20
Automobile production ..... Nov. 7, p. 21
Foundry equipment orders Nov. 7, p. 20..... Nov. 28, p. 21

Prices

Bradstreet's index of commodity prices..... Nov. 21, p. 21

Miscellaneous

Freight traffic ..... Nov. 14, p. 19; Nov. 28, p. 22
Commercial failures ..... Nov. 21, p. 22
Iron and steel imports and exports..... Nov. 7, p. 21
Monthly railroad earnings ..... Nov. 28, p. 22

Thumb Nail Sketches Of Business

Factory employment, which touched a low point in July, gained in August, September and October. The gain in the tenth month was slightly more than seasonal. Meanwhile, hourly earnings are declining, while weekly earnings are mounting slightly. Efficiency in manufacturing operations, measured in cost per unit, is increasing, due not only to lower unit cost of wages, but also to reduced overhead.

Building Construction Still Lags

Based on dollar value, awards for building and engineering construction reported by the F. W. Dodge Corp. declined 15 per cent in October. Of the total, residential construction dropped 4 per cent and nonresidential construction declined 24 per cent. Public engineering projects and buildings continue to dominate the construction field. Interest in low-rent housing projects continues high, but the opposition of many factions and the absence of enabling legislation in many states will delay work of this character months, if not years.

Fewest Cars and Locomotives in 10 Years

American railroads now have fewer freight cars and locomotives than at any time in the past decade. According to the annual report of the car service division of the American Railway association, "freight cars owned by the railroads of this country now total 2,141,647, a reduction of 223,025 cars or 9.4 per cent compared with the number owned in 1925, when the ownership was the highest on record. The average capacity of freight cars today, however, is 47.07 tons, an increase of nearly two and one-half tons since 1925 and an increase of 3.71 tons in the past 10 years. Ownership of locomotives on Oct. 1, 1932, totaled 52,936, a reduction of 12,135 or 18.6 per cent compared with the number owned in 1924, which marked the highest number on record in any one year. At the same time there has been an increase of 16.4 per cent in the tractive power of locomotives and, for the 10-year period, an increase of 19.4 percent."

Electric Power Production Gains Slightly

The Business Survey of the National Industrial Conference board attributes the 3 per cent gain in electric power production in October largely to domestic and lighting service, which "in turn, was stimulated by the increased use of the radio during the election period and by the unusual number of severe storms which swept the Atlantic seaboard during October." Use of electric power in the central industrial section of the country show little change in October from September.

Call Financial Outlook "Promising"

The Guaranty Survey, published by the Guaranty Trust Co. of New York, makes this comment as of Oct. 31: "With hoarding on the decrease, a continuation of the process of liquidating frozen assets, fewer bank suspensions and growing confidence in the country's banks, and a strengthening of reserve balances by member banks, the financial outlook in this country, barring unexpected adverse credit developments abroad, is exceptionally promising."

Money in Circulation on 1931 Level

After a period of nine months in which the daily average of money in circulation has been considerably higher than in the corresponding period of 1931, the volume in October eased slightly against a rise in October, 1931, and in early November of this year it was practically on a par with the volume of early November last year.

The Barometer of Business

Industrial Indicators

	Oct., 1932	Sept., 1932	Oct., 1931
Pig iron output (Daily average, tons)	20,795	19,788	37,831
Machine Tool Index	28.4	27.7	57.4
Unfilled orders (tons)	1,977,040	1,985,090	3,119,430
Ingot output (Daily average, tons)	41,098	37,502	58,997
Dodge Bldg., awards in 37 states (sq. ft.)	.....	13,513,900	30,700,200
*Automobile output	50,270	86,483	81,582
Coal output, tons	32,633,000	26,266,000	35,700,000
Business failures; number	2,273	2,182	2,362
Business failures; liabilities	$52,869,974	$56,127,634	$70,660,436
Cement production, Bbls.	.....	8,189,000	10,762,000
Cotton consumption bales	502,244	491,655	461,023
Car loadings (weekly average)	631,620	620,750	762,631

*Estimated.

Foreign Trade

Exports	$153,000,000	$132,025,000	$204,895,000
Imports	$106,000,000	$98,412,000	$168,708,000
Gold exports	$57,000	$60,000	$398,604,000
Gold imports	$20,674	$27,957,000	$60,919,000

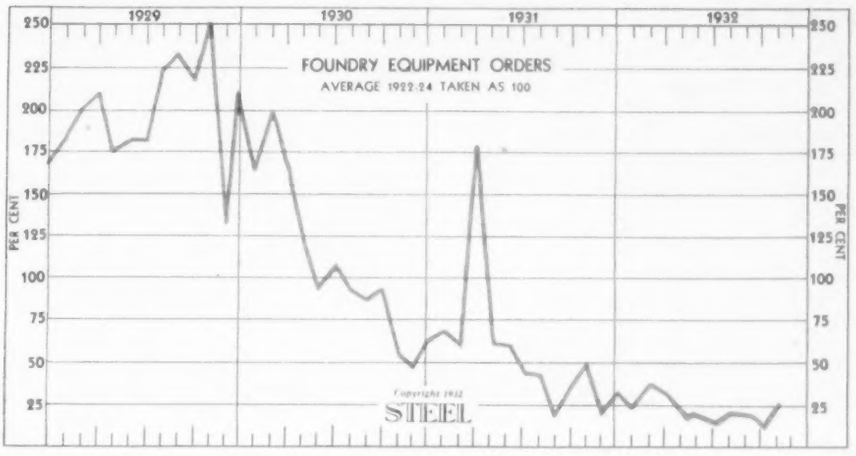
Financial Indicators

	Oct., 1932	Sept., 1932	Oct., 1931
25 Industrial stocks	$90.29	$95.42	$146.56
25 Rail stocks	$22.49	$25.10	$44.72
40 Bonds	$66.57	$68.50	$72.38
Bank clearings (000 omitted)	$19,795,452	$20,390,292	$32,079,120
Commercial paper rate N. Y., per cent)	2	2¼	3½
*Commercial loans (000 omitted)	$6,164,000	$6,218,000	$7,624,000
Federal Reserva ratio, per cent	61.9	60.8	67.1
**Railroad earnings	$49,646,869	$28,368,388	$55,318,586
Stock sales, N. Y. stock exchange	29,187,659	67,424,053	47,895,000
Bond sales, par value	$189,254,100	$246,221,000	$346,979,000

*Leading member banks Federal Reserve System.
**September, August and September respectively.

Commodity Prices

	October, 1932	Sept., 1932	October, 1931	Monthly aver. 1913
STEEL's composite of 14 iron and steel prices	$29.32	$29.32	$30.74	$26.32
Bradstreet's index	$6.97	$7.28	$8.09	100
Wheat, cash (bushel)	66c	70c	51c	92c
Corn, cash (bushel)	42c	46c	54c	51c
Petroleum, crude (Bbl.)	90c	90c	75c	$2.50



	1932	1931
October	23.2	45.9
September	11.9	31.9
August	18.6	16.9
July	18.7	38.7

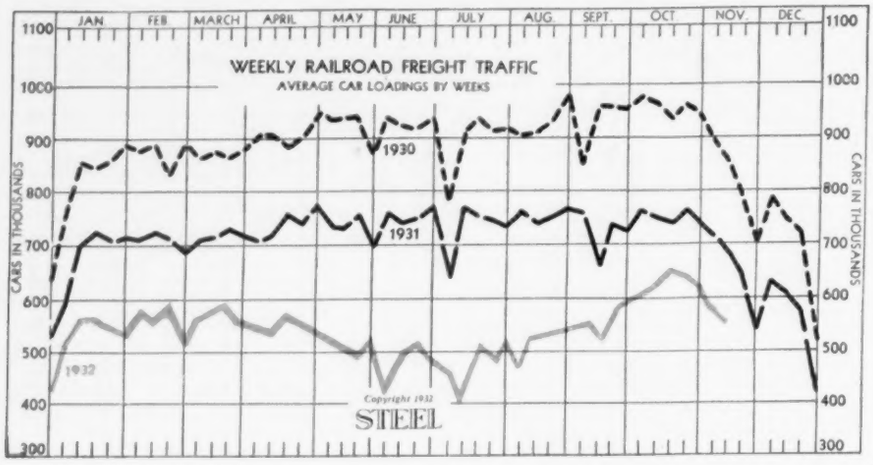
Orders for Foundry Equipment Mount in October

New orders for foundry equipment booked in October by members of the Foundry Equipment Manufacturers' association were the heaviest for any month since last February. The index of gross orders for October stood at 23.2 compared with only 11.9 for September and 45.9 for October last year. With the exception of the February figure of 32.9, the October index was the highest for the present year. Unfilled orders at the end of October were somewhat heavier, the index of 24.4 comparing with 17.6 in September and 56.8 in October, 1931. The index for shipments also made favorable gains in October, the index of 17.6 comparing with 10.2 a month ago and 26.2 a year ago.

Index of Machine Tool Orders Up Slightly in October

The three months moving average of machine tool orders increased slightly in October compared with the preceding month, according to the latest report from the National Machine Tool Builders association. The October index of gross orders stood at 28.4 compared with 27.7 for September and 57.4 for October, 1931. The shipment index increased to 45.4 for October from 42.5 for September and compares with 84.6 for October last year. Unfilled orders on Oct. 31 were about equal to one month's shipments, the index of 41.0 comparing with 59.6 in September and 96.5 in October, 1931. The September figure of gross orders represents the lowest point in recent years.

	Per Cent
October, 1932	28.4
September, 1932	27.7
October, 1931	57.4



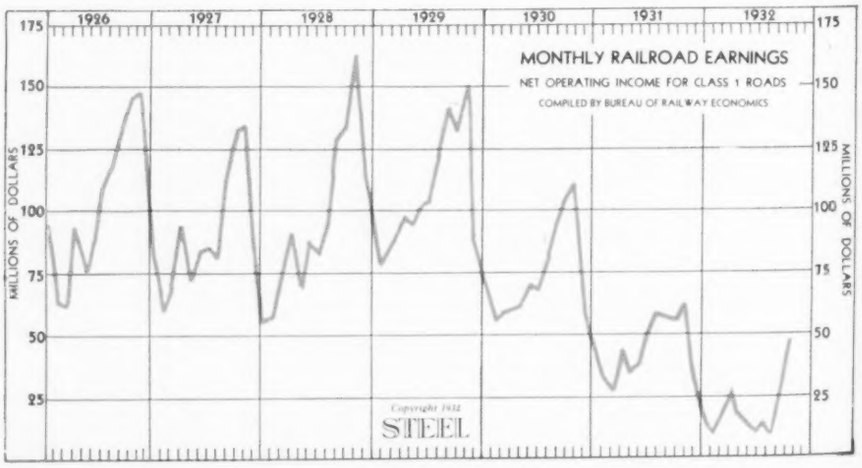
	1932	1931
Nov. 12	537,093	689,960
Nov. 5	588,383	717,048
Oct. 29	617,642	740,363
Oct. 22	642,173	769,673
Oct. 15	650,578	761,596

Freight Car Loadings Follow Seasonal Trend to Lower Levels

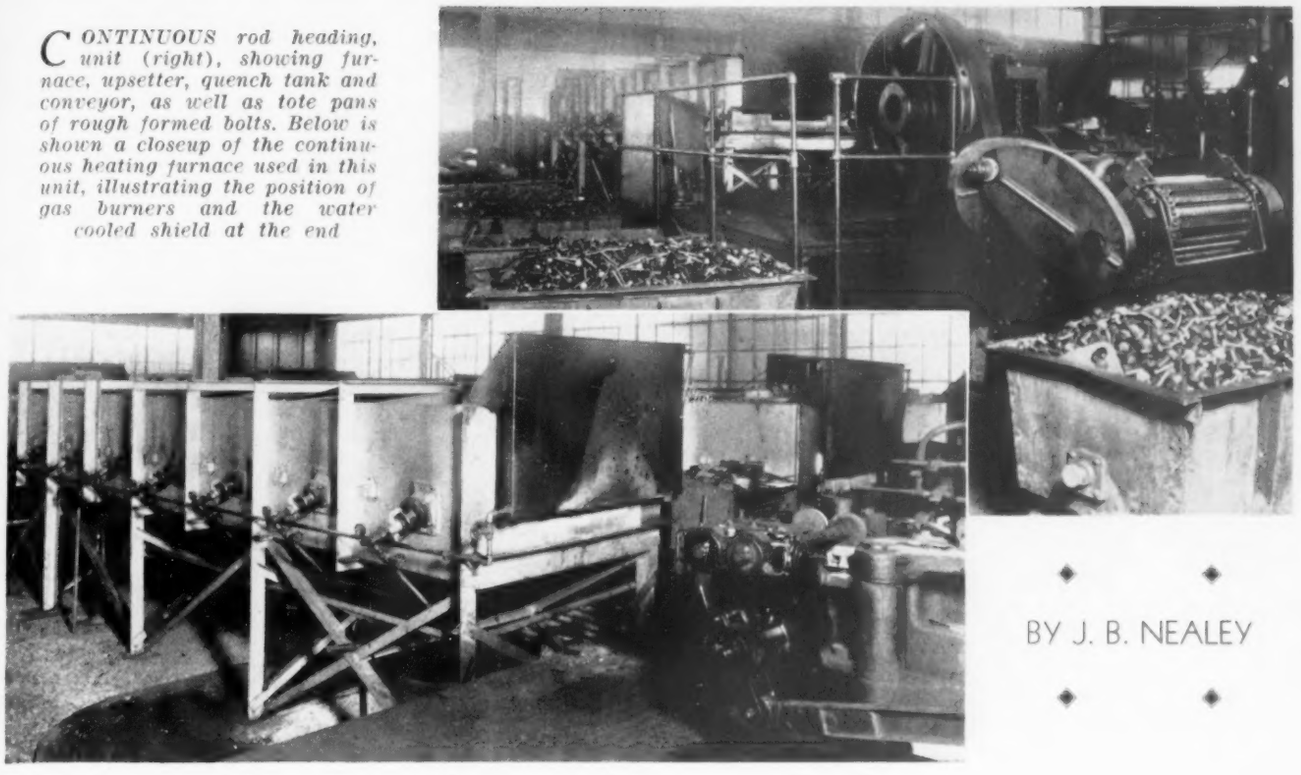
Loading of revenue freight for the week ended Nov. 12 totaled 537,093 cars, according to reports of the American Railway association. This was a reduction of 51,290 cars under the preceding week due to the usual seasonal decline in freight traffic and election day. It also was a decrease of 152,867 cars under the same week in 1931 and nearly 300,000 cars under the same week two years ago. Miscellaneous freight loading for the current week totaled 187,249 cars, a loss of 22,898 cars under the preceding week. All districts reported reductions in the total loading of all commodities compared with the same week in 1931 and 1930.

Railway Earnings Gain in September; 1.59 Per Cent on Investment

Class 1 railroads of the United States for September had a net railway operating income of $49,646,869, which, for that month, was at the annual rate of return of 1.59 per cent on their property investment. In September last year, their net railway operating income was $55,428,260 or 1.77 per cent. During the first nine months of 1932 Class 1 railroads had a net operating income of $202,456,126 which was at the annual rate of return of 1.04 per cent on their property investment, according to reports filed by the Bureau of Railway Economics. In the first nine months of 1931 the railroads operating income aggregated $409,337,148 or 2.09 per



Sept., 1932	$49,646,869
August, 1932	28,368,388
Sept., 1931	55,318,586



CONTINUOUS rod heading, unit (right), showing furnace, upsetter, quench tank and conveyor, as well as tote pans of rough formed bolts. Below is shown a closeup of the continuous heating furnace used in this unit, illustrating the position of gas burners and the water cooled shield at the end

BY J. B. NEALEY

PROGRESSIVE IMPROVEMENTS MADE IN TECHNIQUE OF BOLT MANUFACTURE

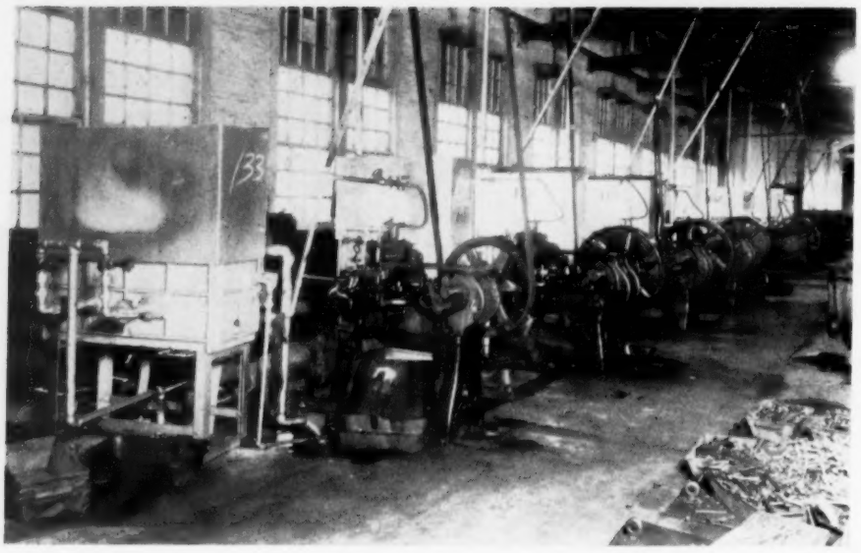
BOLTS, nuts and rivets literally hold the world together. As demands upon these simple items grow constantly heavier, progressive improvements are made in their design and manufacture. Starting with puddled iron, which was a superior metal in its day, the transition to steel was not long delayed, while today alloy steels are gaining universal attention and widespread adoption in the bolt and nut industry. In addition various heat treatments, to bring out improved physical characteristics, have become general in use. More recently the technique of the hot forging process has been so improved as to obtain complete control over the grain flow in the steel and provide the maximum amount of working.

One plant which has passed through these and other progressive changes, and pioneered in many of them, is the Lake Erie Bolt & Nut Co., Cleveland, organized in 1852 as the Lake Erie Iron Co. and now a subsidiary of the Lamson & Sessions Co. This plant produces a complete line of bolts and nuts and in addition makes upset forgings for the automobile trade and the railroad industry. Buildings cover more than eight acres of land.

Bolt sizes below ¾-inch in diameter and up to 6 inches in length can be produced by the cold heading method, althogh most bolts ½-inch and above are formed hot. Hot heading may be classified into, first, continuous rod heading and, second, tong heading, anything over 7 inches in length falling in the latter class.

Continuous rod heading is automatic and continuous, except for the feeding of the rods into the furnace and then placing the ends of the hot rods into the upsetting gripper. When the end of the hot rod is "caught" the upsetter forms the head, cuts to length, ejects the bolt into a quench and slips its grip on the rod back far enough for the next bolt. This it continues to do until the rod is used up, whereupon the operator pushes another hot rod into place. The rods are about 24 feet long and bolts ranging from ⅜ to 1⅛ inches in diameter are produced in these upsetters or headers at a rate of from 100 to 140 per minute, according to the diameter.

Five upsetters are operated, each being served with a gas fired furnace of brick construction, steel encased and setting on 3-foot legs, shown in the illustration above. Each furnace, shown in the illustration above, is 26



One battery of gas furnaces and upsetters operated in the tong heading division

feet long, 5 feet wide and 4 feet high. There are eight gas burners on each side of the furnace, 16 in all. The burners fire tangentially against the arc of the roof and they are staggered so as not to fire against one another. In this way circulation of the hot products of combustion, from opposite directions, is obtained. High pressure gas is used and each furnace has an automatic temperature control, which includes a motor operated valve in the gas supply line by which the gas supply to the burners is increased or decreased automatically, as the furnace becomes too hot or too cold.

The upsetters, as illustrated on the preceding page, are placed on platforms so that the "grippers" are on a level with the slots in the ends of the furnaces, quench tanks being located below the platforms. The slots are the only openings in the furnaces and are of such a size to allow the rods to pass through easily. Several rods are charged into each furnace simultaneously and as soon as one is removed it is replaced by another, according to a time schedule that will always insure hot metal for the machine. To protect the operators water cooled baffles or boxes are placed at each end of the furnace so that the heat emerging from the end slots passes up between them and the furnace.

Quenched Automatically

From the upsetters the bolts are ejected into steel quench tanks 12 feet long, 2 feet wide and 20 inches deep. Each tank is provided with an apron conveyor which receives the bolts as they drop through the quenching medium and carries them up and out of the solution, finally depositing them into boxes on trucks for further handling. This quench from the forging heat is a regular hardening treatment, used on standard bolts, and adds 10,000 pounds to the tensile strength, the final tensile strength of regular material product being a minimum of 80,000 pounds per square inch.

Even Temperature Maintained

The quenches are kept cool by an automatic cooling system which includes the regulation-type cooling tower. When the temperature rises above 160 degrees Fahr. pumps are automatically started which force the quenching medium out of the tanks and over the tower. As soon as the temperature drops to 120 degrees Fahr. the pumps are stopped automatically.

Tong heading derives its name from the fact that the stock is sheared to length and then handled with tongs by an operator from stock buggy to the furnace, from the furnace to the upsetter and finally into boxes for transfer to the heat treating department. Bolts ranging from 3/16 to 2½ inches in diameter and of any length, are made in this division. Here also are located 20 upsetters and 20 gas fired slot-type furnaces. These furnaces are hooded and range in size from 3 to 8 feet long, 14 to 24 inches deep and 20 to 30 inches high, each resting on 3-foot legs. They are heated with from 2 to 6 gas burners each and the burners are located in the lower backwall, so as to underfire the work.

Cooled by Water and Air

To protect the operator from the heat emanating from the front slot of the furnace a metal water cooled shield is used. The metal shield is cooled with a continuous supply of water flowing from a perforated pipe in front of the hood, and has a trough at the bottom which catches the water. This is augmented with a forced air shield over the slot from a welded steel box which is located below and in front of the furnace slot. This box is as long as the slot, 2 inches thick and 6 inches wide. It is bolted to the furnace wall to form a 6-inch shelf in front of the slot for the work to rest on while the ends are being heated. There are three rows of holes in this box, through which the air may escape after it is forced in through a pipe in one end. This forced air shield blows directly upward in front of the slot and forces the flame and heat up between the furnace and the water shield.

Gas at 25 to 30 pounds pressure is used in velocity-type venturi burners which inspirate air for combustion. These can be regulated to provide either a reducing, neutral or oxidizing mixture. For tong heading a slightly reducing atmosphere is employed, to keep scaling to a minimum. Three of the furnaces,

Gas furnace and forging machine, also showing welded steel buggies on which stock is evenly piled, effectively reducing handling time

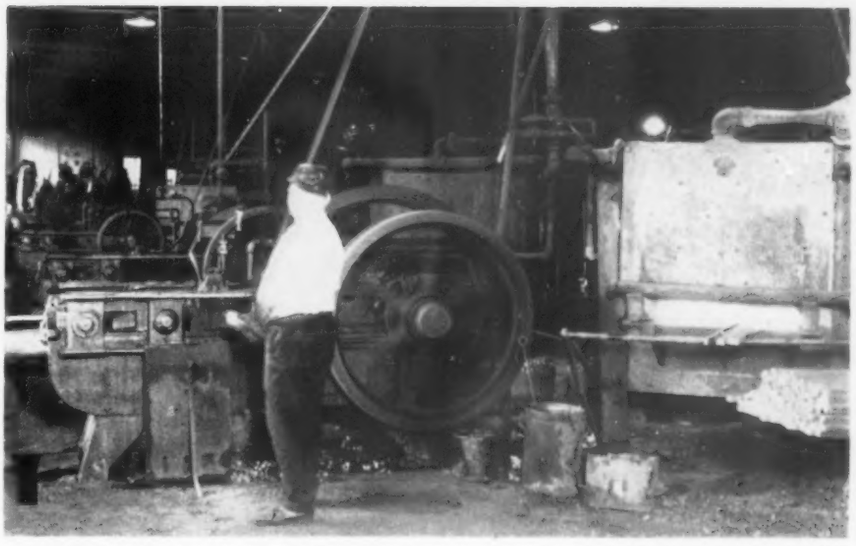
however, use the low-pressure system of firing. There is a special bolt and nut forging setup for 3½-inch sizes, shown in the illustration at the bottom of this page.

Among the labor saving devices used is a stock buggy, which consists of a welded steel frame on wheels. The sheared stock is piled neatly on the buggy which in turn can be wheeled in front of the furnace. The operator charges the furnace directly from the piled buggy with a minimum amount of motion and handling. This method replaces the old method by which the stock was thrown haphazardly on the floor, and it shows an increase in efficiency of 15 per cent.

Ten Presses Make Nuts

The hot pressed nut division comprises 10 units, each including a furnace and nut forming machine. Flat steel bars, approximately 10 feet long are heated in the furnaces and then transferred to the machines which punch or pierce, crown, cut off and eject in a single stroke. When the hot portion is used up the remainder of the bar is again heated and so on until it is consumed. Strictly speaking the machine first shears the stock to length and forces the piece into a stationary die; the piercer then punches out the center and is followed by the crowner which shapes one face. A second forward movement of the crowner serves to eject the nut and slug. They fall onto a traveling conveyor and are transferred to containers.

Two methods are used for screening the slugs and scrap from the nuts. The first utilizes a flat shaker screen. The material, composed of the nuts and slugs, is lifted and dumped onto the shaker screen by an elevator conveyor, everything but the nuts falling through the screen. The nuts pass over the edge into containers and are removed to the burring department. With the second method the larger sized nuts are passed through a revolving steel cylinder, 4 feet long and 2 feet in diameter, provided with long slots through which the slugs fall. These slots can be adjusted to accommodate slugs from different sized nuts.



View in hot pressed nut division, showing forge furnace from which the operator has removed a heated rod and placed it in the nut forming machine

Slot-Type Furnaces Used

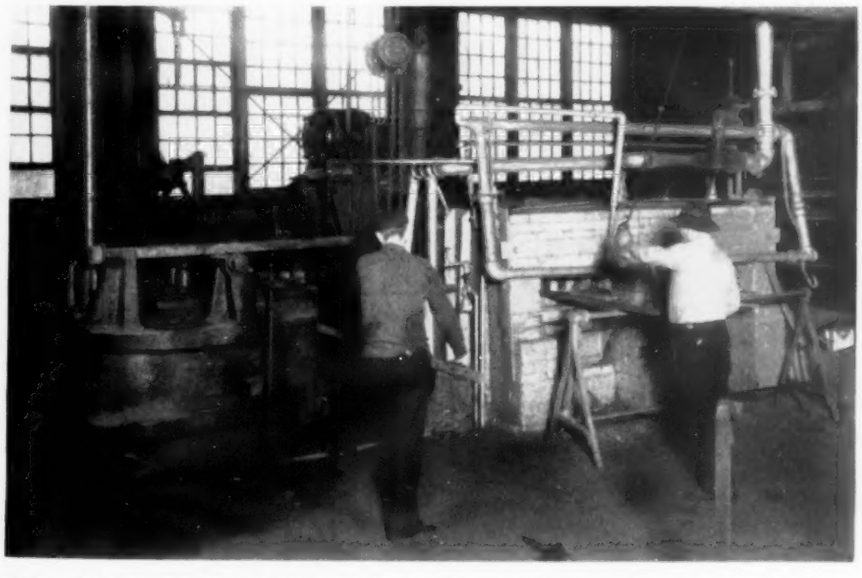
Forge furnaces in the hot pressed nut division are of the slot type. They are of brick, steel encased, and each is heated with two gas burners, one in each end. Most of these furnaces are 4 feet wide, 5 feet deep, 2 feet high and set on 3-foot legs. A 2-inch perforated pipe, built into the lower lip of the slot is used to blow the escaping heat up and behind a hanging shield to protect the operator. One of these furnaces is double chambered. The largest machine, one forming 1½-inch nuts, is served with two furnaces.

The tool steel hardening department uses five periodic gas furnaces of brick, steel encased, and about 5 feet in all three dimensions. Each is underfired, with one gas burner located in front. The furnaces are used interchangeably for various types of heat treatment, and are served with four steel quench tanks.

In the heat treatment of product a long gas furnace, of brick construction, steel encased, is employed. This unit is 22 feet long, 4 feet high and 4 feet wide and is fired with eight gas burners on one side and 7 on the other. It is equipped with a wire mesh traveling conveyor of alloy steel which projects beyond the charging end some 8 feet to form a loading table. This conveyor is suspended between pulleys and is driven by a 5-horsepower motor through speed reduction gears. The parts pass through the furnace and are dumped from the discharge end of the belt, through a hole in the hearth of the furnace directly into either an oil or water quench.

Zoned Heat Control

This unit is divided into two zones, preheat and heating, each with automatic temperature control through a recording pyrometer. The furnace control operates up to a temperature of 1650 degrees Fahr. Below the discharge end and projecting under, just enough to receive the work from the chute, are two steel quench tanks, each 8 feet long and 4 feet wide, one for oil and the other for water. The tanks are mounted on trucks so that either can be quickly rolled sidewise into place to receive the work. Both are equipped with traveling conveyors which move the work through the quenching medium and out. The



Setup for heating and forging 3½-inch bolts. Notice the minimum size of openings in the forge furnace for introduction of stock

product is dumped into containers for further handling.

In addition to the hot work divisions and heat treating department, there are the cold work sections including cold upsetting, pointing, roll or cut threading, tapping, trimming, drilling, inspection, sorting, packing, etc. There is a complete, modern machine shop for making dies, tools, jigs, etc., and the company has its own power plant. A physical test laboratory is continuously active making tests on all incoming material and checking the quality of the finished product.

Nails Given Sand Blast Treatment Show Increased Holding Power

VARIOUS methods have been developed for improving the holding power of nails and other fastenings driven into wood. These treatments include cement coating, sand blasting and acid etching of the nail surface to produce a roughened condition, but of these treatments only cement coating has received wide commercial application.

Steel nails are made and consumed in large quantities but for many years the general shape and type has remained largely the same. During this time hundreds of special nails and fastening devices have been developed for special purposes but these constitute a relatively small proportion of total nail production. Perhaps the failure to improve the common nail to any marked degree may be attributed to the extremely small margin of profit which is afforded in nail manufacture, thus leaving little room for changing the product.

Recently the Forest Products laboratory maintained in Madison, Wis., by the United States department of Agriculture in co-operation with the University of Wisconsin, announced a new chemical process for improving the holding power of nails by microscopic pitting or etching of the nail surface. This process was described briefly in the Aug. 22 issue of STEEL.

Tests conducted by the laboratory revealed that nails treated by the process had a holding power ranging from 91 to 207 per cent higher than plain nails, depending upon the species of wood into which the nails were driven. Cement coated nails had a holding power ranging from 87 to 179 per cent over plain nails.

Patent Granted in 1929

Early in 1929 Gregory J. Comstock, director of research, Firth-Sterling Steel Co., McKeesport, Pa., obtained a patent covering both acid etching and sand blasting of nails and fastenings to improve their holding properties. The patent contemplated the roughening of surfaces of cotter pins, bolts, screws and staples and the like, as well as nails.

In the cast of nails, the roughening can be effected on the wire before the nail is formed. Furthermore, the nails, whether treated before or after forming can be galvanized as desired without destroying the rough quality.

In the accompanying table are shown comparative results of withdrawing 8-penny 0.112-inch diameter plain, cement coated and sand blasted nails from white pine. The nails were driven to a depth of 2⅛ inches on Feb. 2, 1932, and were withdrawn on Feb. 6. It is interesting to note that the results of this test check closely with the results obtained by the Forest Products laboratory with its chemically treated nail, indicating that roughening of nail surfaces produces the same effect in nail holding power, regardless of how the roughened surface is effected.

According to Mr. Comstock, the sand blast is applied to large quantities of nails at one time, thereby minimizing the cost. On this basis, it is said that the roughening treatment can be applied for approximately 0.4 cent per pound.

Holding Properties of Nails in White Pine

Force To Withdraw Expressed in Pounds

			Sand Blasted Nails					
	Plain nails	Coated nails	20-grit plain	20-grit coated	40-grit plain	40-grit coated	60-grit plain	60-grit coated
	100	125	230	305	240	330	300	465
	90	160	230	285	225	470	200	540
	85	180	240	290	255	360	255	490
	90	135	220	350	260	400	175	555
	70	130	185	300	260	415	165	465
	100	140	225	320	160	450	235	500
	80	110	220	275	170	480	255	490
	.....	125	220	.....	180	330	230	.....
Ave.	89	138	221	303	243	404	226	500
Increase in Resistance to Withdrawal Over Plain Nails, Per Cent								
	.....	55	149	240	173	354	154	437
Increase in Resistance to Withdrawal Over Coated Nails, Per Cent								
	.....	.....	60	120	76	192	64	262
Increase in Resistance to Withdrawal of Sand Blasted and Coated Over Sand Blasted of Equal Grit, Per Cent								
	.....	.....	.....	37	.....	66	.....	120

Metallic Zinc Paint Effective

TRAVELERS in the Rhine valley and other industrial regions of Europe probably have been interested to observe that many of the great steel structures—bridges, towers, metal-clad plant buildings and warehouses—are finished in an attractive, harmonious gray. Equally interesting, but not generally known, is the fact that this attractive appearance results from the use of a distinctive type of paint, known as metallic zinc paint.

In this paint, which is being used to an increasing extent in the United States, the principal pigment is a metallic zinc powder, frequently referred to as "zinc dust." This powder, produced by a distillation process in specially designed furnaces, is mixed with zinc oxide in a linseed oil vehicle of the usual type.

Protects Against Corrosion

Metallic zinc paint has been found to be a particularly effective protection against corrosion for exposed metal surfaces. It has been used not only on steel buildings and other structures, but in electrical equipment, on the inside and outside of water tanks, on the hulls of battleships, and under many other difficult conditions. It has been found also to fill a need in the painting of galvanized iron or sheet zinc surfaces, due to its unusual ability to adhere to these surfaces.

Zinc paint has been used extensively by a nummer of large industrial concerns. It has been used for some time as a priming coat on all police department traffic signs in New York, and recently has been used for the same purpose on the Mt. Hope bridge at Bristol, R. I. This steel structure is subject to se-

vere corrosive conditions, due to the prevalence of heavy salt fogs and variations in temperature.

An educational campaign, to explain the merits of metallic zinc paint, is being carried on by the American Zinc institute, New York, and an increasing amount of interest is being shown by paint manufacturers, dealers and consumers. Approximately 50 paint manufacturers have undertaken its production and exploitation.

Unit Converts Dry Ice Into Gas

HITHERTO, carbonated beverage bottling establishments and soda fountains have been obtaining their carbon dioxide gas in steel bottles or cylinders, entailing heavy expenditures for freight and other charges involved in transporting and handling these heavy containers. Wm. Wharton Jr. & Co., Easton, Pa., for many years manufacturers of these steel cylinders, have placed on the market a new type of steel cylinder for converting frozen carbonic acid gas, or "dry ice," into gas. The cylinder is installed permanently and is refilled as often as necessary with a new charge of dry ice, as shown in the accompanying illustration. In 14 hours after the charge of dry ice has been introduced, the pressure of carbonic acid gas is sufficient for carbonating beverages. Hence, each installation must consist of two or more units, so that while one or more are in use, others may be in the preparation state. One large eastern carbonating plant has installed 14 of these new cylinders.

Carboverters, as the new units are called, are formed from steel billets. These are pressed into cups which in turn are drawn into cylinders. The lid is a plain, circular, steel plate which is held in place against a flange by the pressure of gas within the cylinder. The cylinder is capped at the top and an ordinary gas valve inserted which is connected with the bottling apparatus or foundation. The units are made in two sizes, one weighing 350 pounds and the other 120 pounds. Several hundred already have been sold and the potential consumption of steel in this new form is regarded as considerable.

Improves Strip by Cold Rolling Under Tension

Tensioning strip steel in the process of cold reduction is made possible by a new type apparatus recently developed by W. C. McBain and patented by the Cold Metal Process Co., Youngstown, O.

Charging dry ice into steel cylinder where it is converted to carbon dioxide gas

The device is adaptable to single stand reversing strip mills and is of special importance in the large sizes of mills used for cold rolling strip for tin plate or automobile body sheets where the cost of power is an important item. The patent claims the recovery of power from tensioning the strip as it is fed into the mill, thus making practical the use of higher back tensions in cold rolling.

One 38-inch Steckel cold strip mill with power recovery from the unwinding reel has been in operation at the plant of the Weirton Steel Co., Weirton, W. Va., for about two years. Another Steckel mill of the same size and type has been shipped to the Trumbull division of the Republic Steel Corp., Warren, O., and will be placed in operation at an early date. This also is a 38-inch mill and is equipped with two motors arranged for power recovery.

Benefits derived from back tensioning include flatter strip, easier guiding through the mill and a saving in the quantity of cooling water.

Describes Making of Two-Ply Stainless Steels

The method of producing stainless-clad steel developed recently by the Ingersoll Steel & Disk Co., Chicago, a division of the Borg-Warner Corp., was described Nov. 18, at a meeting of the Chicago section of the American Welding society by W. W. Patrick, chief metallurgist of the company. The speaker also touched on the applications of this material and methods of fabricating and welding.

According to Mr. Patrick, the fact that the two-ply metal can be produced at approximately one-half the cost of solid stainless steels opens up its use to many applications where beauty, permanence and corrosion resistance are desired, but where the cost of solid stainless is prohibitive.

In connection with the address, samples of successful butt, lap, flange and spot welds by both gas and arc methods were displayed, as well as finished products such as cooking utensils, deep-drawn tanks and vats, complicated stampings, etc.

FABRICATES MACHINERY PARTS BY WELDING: The Welded Products Co., 4900 Cecelia street, Los Angeles, is finding wide acceptance of its fabriform process of welded steel plate construction. This illustration shows a miscellany of parts which the company makes by this method. A variety of parts not shown here includes grinder pedestals, motor and compressor bases, sprockets, press frames, brake shoes for metal to metal brakes, top and bottom jack stops for oil derricks, gears, and flanges

IMPROVING OPEN-HEARTH FURNACE DESIGN

By WILLIAM C. BUELL JR.

Part II Back and Front Walls

(Ninth Article of Series)

REFRACTORY materials available for back wall construction include ground magnesite, dolomite, fire and silica brick, chrome and magnesite brick and insulating brick.

Ground Magnesite, Dolomite and Other Granular Basic Refractories: These materials, which form the inner or hot surface of the wall, are continually under replacement or patching. Since no suitable substitute is available their continued use seems most desirable. Frequently in the use of these granular refractories an important detail of a better practice is overlooked, namely, at the junction of the granular material with the roof. The last several inches of the inner back wall surface may be formed best with chrome ore, thus separating the acid silica of the roof from the basic material of the back wall with a neutral material. The preferred method of developing the back wall in this respect is shown in Fig. 17, furnace L. An early failure of the roof and skewback brick to some degree may be brought about chemically by the intimate contact of acid and basic materials.

Fire and Silica Brick: In spite of the fact that modern design appears to favor the use of silica brick as the principal component of back walls, the preferred use of firebrick, particularly, if hard burned, easily can be justified. Chemically, the slightly acid firebrick is much more stable than the highly acid silica brick in the presence of basic seepages. Thermally, firebrick is more heat resistant. No temperature likely will be encountered in the back wall during operation that approaches the critical temperature of suitable firebrick, as will be shown later. Mechanically, the thermal expansion of firebrick is only about one-third that of silica brick which is a most valuable factor in maintaining the height of the back wall in proper relation to the skew elements of the furnace roof. The cost of either is approximately the same. With a properly designed roof system the superimposed weight on the back wall offers no compression stresses that would warrant the use of silica rather than firebrick. The use of firebrick for this purpose should be extended.

Chrome and Magnesite Brick: The high first cost and the relatively low resistance to heat flow of these refractories does not justify their use in back walls other than the use of a half course of chrome brick between the ground material and the fire or silica brick comprising the principal component of the back wall.

Insulating Brick: Insulation by all means should be included in back walls, but here as in furnace bottoms, the thermal reactions from its use should be investigated carefully, inasmuch as the improper application of insulation may develop temperature of the inner surface of the insulation in excess of those the material will stand.

Back Wall Design

The sloping back wall has so many well recognized advantages that it will be considered to the exclusion of all others. In subsequent chapters an effort will be made to demonstrate that a constant back wall height can and should be maintained for furnaces of 100 to 350 tons capacity. These comments, therefore, refer to a back wall of constant cross section that universally may be used in new construction.

For the purposes of analyses four combinations of refractories have been assembled in Table XX. Back wall YA is included to show that a 13½-inch thickness is not sufficient to secure satisfactory thermal results. Structurally a 13½-inch back wall does not work in well with the skewback brick of the roof. YB is included to demonstrate the effect of an 18-inch wall without insulation. This being the maximum thickness that can be incorporated conveniently in back wall design. YC, which contains 4½ inches of high

Table XX

Refractories of Selected Back Walls

Back wall	Granular material, inches	Chrome brick, inches	Fire-brick, inches	Insulating brick, inches	Total solid refractory thickness, inches
YA	5	4½	9	None	13½
YB	5	4½	13½	None	18
YC	5	4½	9	4½	18
YD	5	4½	9	4½	18

Table XXI

Cost of Selected Back Walls

Back wall	*Height, ft. - in.	Refractory Cost Per sq. ft.	Per foot of width	Per 48 feet
YA	4 - 9	$5.00	$23.75	$1190
YB	4 - 9	5.54	26.30	1260
YC	4 - 9	5.83	27.70	1330
YD	4 - 9	5.83	27.70	1330

*See Fig. 19.

Table XXII

Thermal Properties of Selected Back Walls

Back wall	Temperature, °Fahr. Flame,	Inner surface	Coefficients Granular material	Brick	R	Outer surface, °Fahr.	Emission rate	Heat flow, B.t.u./sq. ft./hr.
Column	a	b	c	d	e	f	g	h
YA	3148	2660	0.23	1.341	1.571	500	8.0	3200
YB	3148	2710	0.23	1.904	2.134	440	7.0	2380
YC	3148	2890	0.23	4.931	5.161	308	5.1	1061
YD	3148	2830	0.23	3.131	3.361	363	5.9	1552

All figures used in this table are based on conditions similar to those applying to Table XVII.

Table XXIII

Maximum Temperatures in Selected Back Walls

Furnace	Heat flow, B.t.u./sq. ft./hr.	Flame temperature, degree Fahr.	Inner surface, degree Fahr.	Max. Temp., degree Fahr.		Outer surface, degree Fahr.
				Firebrick	Insulation	
YA.....	3200	3148	2660	2047	None	500
YB.....	2380	3148	2710	2234	None	440
YC.....	1061	3148	2890	2670	2108	308
YD.....	1552	3148	2830	2509	1683	363

grade insulation, is included to show excessive interior temperatures developed as a result of over-insulation.

Back wall YD, which contains 4½ inches of insulation with a heat resistant value of about one-half of those used in back wall YC, indicates the proper use of insulation. For purely design and structural reasons, back wall YD is developed with 4½ inches of inferior insulation rather than 2¼ inches of the higher grade insulation of back wall YC, which would of course produce equal thermal effects. Back wall YD is the preferred design.

The costs of these four back walls are listed in Table XXI and may be compared with those of existing furnaces in Table XVI.

The unit heat flow through these back walls is tabulated in Table XXII and may be compared with similar data in Table XVII. Back wall YA listed in Table XXII and which may be considered unsatisfactory in design, has better thermal qualities and transmits less heat than all but three back walls, furnaces E, H and J, of Table XVII. Of the three exceptions, furnaces H and J, indicate their superior performance through the use of firebrick rather than silica brick.

That back wall YC with its extremely low outer surface temperature of 308 degrees Fahr. and heat flow of 1061 B.t.u. has interior temperatures too high to permit the probable maintenance of the materials; that back wall YD with its higher values is the preferred design; and, that the empirical use of insulation is highly dangerous, are shown figuratively in Table XXIII and graphically in Fig. 18.

1800 Degrees Is Maximum

As mentioned in a previous article 1800 degrees Fahr. is the maximum temperature to which insulation should be subjected continuously, bearing in mind all the limitations of the materials at present available. On this basis, back wall YC is over-insulated, while YD is safely within the maximum figures. Accordingly, back wall YD is specified as the preferred design.

Data from Tables XXI and XXII are assembled in Table XXIV for the purpose of developing the cost per *R*

Table XXIV

Refractory Values for Selected Back Walls

Back wall	Cost/per sq. ft. (Table XXI)	Combined resistance, *R* (Table XXII)	Cost per *R*
YA.....	$5.00	1.571	$3.18
YB.....	5.54	2.134	2.60
YC.....	5.83	5.161	1.11
YD.....	5.83	3.361	1.72

with about the same amount of money. Comparison of the radiated heat and refractory costs of back wall YD with the highest and lowest cost of these items in Table XIX, discloses attractive savings. Of the primary group, furnace H has the lowest back wall radiated heat cost, $1174, over one and a half times that of YD; while furnaces D or M with $2407, over three times that of YD, have the highest operating costs.

A saving in the fuel cost from the stoppage of back wall radiation only of $500 to $1700 per furnace per year certainly is well worth while especially when other economies in operation and upkeep will accrue contingently.

Justifies Higher Cost

The lowest refractory cost is found in the back wall of furnace I, $672, which is about one-half that of YD.

Table XXIV

Economic Data on Selected Back Walls

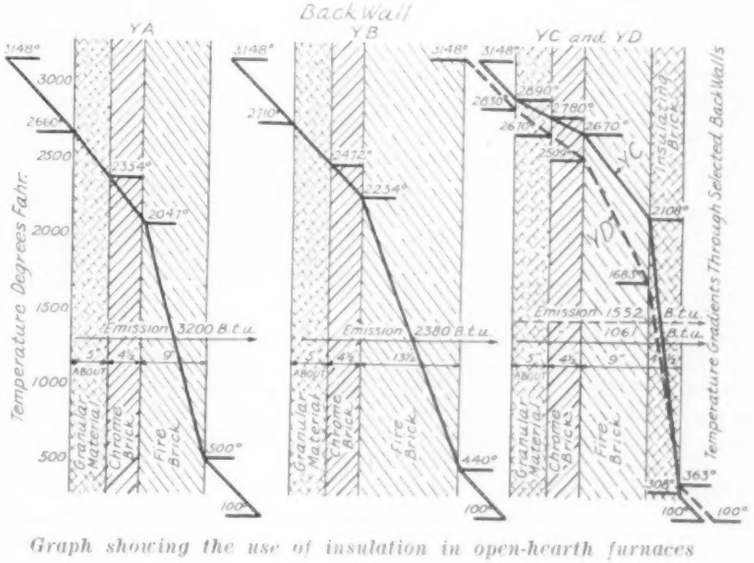
Back wall	Dimensions ft.-in. x ft.	Area sq. ft.	Emission, B.t.u. per hour Per foot	Total	Annual radiated heat cost	Refractory cost
YA.....	4 - 9 x 48	228	3200	729,600	$1555	$1190
YB.....	4 - 9 x 48	228	2380	543,000	1174	1260
YC.....	4 - 9 x 48	228	1061	241,900	516	1330
YD.....	4 - 9 x 48	228	1552	353,900	752	1330

of the selected back walls, and may be compared with similar data in Table XVIII. Certain data of the foregoing tables are abstracted and tabulated in Table XXV for comparison with the economic data of Table XIX.

Savings Are Effected

Table XXIV and XXV clearly demonstrate that much or little may be accomplished in refractory design However, the radiated heat cost is $1615. To install YD would cost $658 more than I, but the annual saving in fuel alone would amount to $863, which, in any event, would more than justify its installation. Incidentally, the back wall of furnace I is but 13½ feet thick. As has been stated this thickness is not considered sufficient according to the best design.

(To be continued)



Graph showing the use of insulation in open-hearth furnaces

Nickel Has Favorable Effect On Nitriding Steels

COMMERCIAL nitriding steels in the United States have contained combinations of the alloying elements chromium, aluminum, molybdenum and vanadium; nickel has not been an essential constituent and, in fact, has so far usually been avoided. That nickel can serve a useful role in nitriding steels was shown in a technical discussion presented at a research session of the American Society for Steel Treating in Buffalo, Oct. 4, by H. J. French, International Nickel Co. Inc., New York. Prof. V. O. Homerberg, Massachusetts Institute of Technology, Cambridge, Mass., co-operated in preparation of the data.

Principal benefits of nickel in nitriding steels are found in its strengthening and toughening effects upon the nitrided case, its strengthening and hardening effects upon the core by which to provide better support to the case, and its development of dispersion hardening phenomena in steel containing appreciable proportions of aluminum by which an automatic increase in core strength and elastic properties is obtained during the nitriding cycle.

As a result of these effects, nickel may be added in varying and regulated proportions to nitriding steels to control the toughness-hardness relations of the case and core and to provide a wide range of properties to meet varied service requirements, according to the authors, who emphasized that they recommended no specific analysis of nitriding steel with nickel content, confining their remarks to pointing out the beneficial role which nickel might be made to assume in these steels. Investigations made by Mr. French and Prof. Homerberg covered a variety of nitriding steels containing nickel in various amounts from 1 to 4 per cent.

Cementite Varies in Composition

A second paper considered in the research session presented new data regarding the cementite phase in the iron-carbon system. The work was carried out by H. A. Schwartz and C. H. Junge, National Malleable & Steel Castings Co., Cleveland, and Kent R. Van Horn, Aluminum Co. of America, Cleveland. The study was summarized by Dr. Schwartz, who showed that cementite during the process of graphitization is not of constant composition, hence is Fe_3C only if certain time-temperature conditions have been realized. Chemical and crystallographic characteristics of this new variant were recorded and the sequence of changes in the cementite phase during graphitization worked out. The authors suggested that the term cementite should be applied to any phase of this space lattice, the term iron carbide being reserved for such a phase when of the composition Fe_3C.

Review Creep Testing

Research workers constantly are devoting more attention to the aspects of creep testing of metals and consequently eagerly received the latest contribution to this subject by A. E. White and C. L. Clark, department of engineering research, University of Michigan, Ann Arbor Mich., who discussed creep testing from some of its fundamental aspects, beginning with a brief historical development of physical testing leading up to creep testing. Equipment used for creep tests at the University of Michigan was described and results of tests made there were outlined.

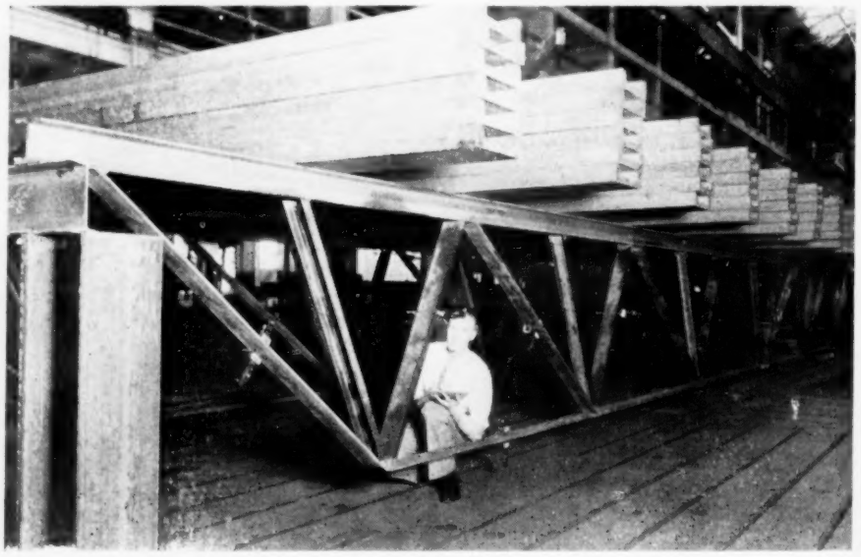
Differences due to the single step, up-step and down-step method of loading were cited—the lowest rate of creep being obtained by the down-step method. The latter method of loading consists in subjecting the test specimen to a high stress and reducing that stress to one of a lower value and continuing the test at that stress until the rate of flow becomes constant or occurs at a diminishing rate. The stress then is lowered and the same procedure is reported. This is continued for three or more times, after which it is possible to plot the results of the data.

As an illustration of current interest in creep tests of metals, the authors declared that possibly no development in recent years in metallurgical field has done more to ground metallurgy in fundamentals than the studies and investigations in the field of creep. This work has raised testing methods to the highest degree of precision and it is causing metallurgists to inquire constantly with respect to the nature and constitution of matter.

Manufacture of Stainless

Light initial drafts on the blooming mill in the conversion of stainless steel ingots to other semifinished shapes will avoid rupturing the corners or tearing the skin, according to E. R. Johnson and R. Sergeson, metallurgical department, Republic Steel Corp., Massillon, O., whose paper on "Manufacture of Stainless Steels," was presented before a corrosion-resisting steel session, by L. Pitburn, associated with the metallurgical department of the company.

Slow-speed hand mills such as are used for tool steel bars, are better than continuous trains. The authors



WELDED TRUSS DESIGN ONE-THIRD LIGHTER: Probably the first radical change in truss design within the last 10 years is represented by this welded roof truss consisting of continuous tension straps. It was developed by J. E. Webster of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and will be used in a new building at the company's Derry, Pa., plant. The new design saves 35 per cent over the former welded design, this economy being brought about by designing the truss so that all members have uniform stress. In construction the truss is an expansion of the kingpost principle, the 52-foot design shown comprising an upper compression member, three continuous tension straps, and 12 short struts, fabricated by combination butt and fillet welds. It is designed for 38,000 pounds, weighs about 2000 pounds and is supporting a load of 39,600 pounds

contend that it is impossible to roll stainless steels with the same setup used for carbon or alloy steels, since the stainless grade tends to spread in the rolls, requires tighter guides, and tends to build up scale on the guides which soon mark the bar.

If a substantial tonnage of one size of sheet bar is required, the bar mill or universal strip mill is selected for rolling the product. For smaller lots, the authors stated, it is better to roll plate or slabs on the jobbing mill and shear these into sheet bar sizes. Sheet bars usually are pickled in 10 per cent sulphuric acid at 150 degrees Fahr. and ground free from any defects. Sometimes, the authors explained, it is necessary to add a little hydrochloric acid to loosen the mill scale. Heating or rolling equipment is essentially the same as for common steels.

Uniform Patenting of Wire Demands Accurate Time-Temperature Control

PATENTING of steel wire is a temperature-time process. If the temperature is high the time can be low and if the temperature is low the time must be high. This fact was brought out by R. B. Whyte, general superintendent, MacWhite Co., Kenosha, Wis., at a session of the Wire association, whose third annual meeting, held in Buffalo, Oct. 3-7, was acclaimed by those in attendance as the most successful yet conducted by the association.

The papers were limited to one per session, thus permitting a wide discussion of miscellaneous problems dealing with the operation of wire mills. On account of the interest displayed by the members in the discussions a large portion of the questions scheduled for consideration at various sessions was crowded off the program. The desire on the part of many members is that future sessions of the association will be scheduled along the same lines as this year's program.

Precise Control Required

Mr. Whyte, in discussing "Patenting of Rods and Wire," mentioned that in order to get uniform patenting, the control of temperatures must be accurate and uniform. The speed at which the material is drawn through the furnace, he said, must be uniform and constant. Equipment for regulating this speed must be capable of giving any speed between the low and the high of the range required. The speaker warned in conclusion that any slight change in temperature or time produces slight differences in the resultant structure of the product.

The coarser the structure of the wire at the start of the draw, the longer will be the fiber at the end of the draw, stated a metallurgist in commenting on the patenting process. He mentioned that a steel patented just above the critical temperature will withstand from 1 to 2 drafts. Many methods are used for patenting, an operator stated, but the mill man is interested only in the method he can control best. Many ideas on air, lead or salt patenting were exchanged, most operators agreeing that for the regulation and duplication of tensile strengths in wire, the lead or salt bath is the best medium.

Cools Carbide Dies

In discussing tungsten carbide dies, an Ohio wiremaker mentioned that his company has 12 continuous wire drawing machines equipped with this type die. On account of the heat retained by the tungsten carbide casing and nib, the speaker stated, better die life is obtained by cooling the die with water fed through a 1/16-inch nozzle.

Some wire drawing departments have fairly complete records of dies from the time they are issued until they are returned for recutting. A large user of tungsten carbide dies stated that records were kept on the performance of this type of die when first installed but after various campaigns disclosed their long life, record keeping was abandoned. Another operator interested only in the last diameter of wire the finishing die is capable of drawing, maintains a record of the life by running a wire 3 or 4 inches through the die when first installed and duplicating this operation when the die is discarded. Comparison of the two wires gives the record desired.

A well-known authority on wiremaking in commenting on pickling of rods pointed out that a Belgian wire producer decreased the pickling time from 45 to 5 minutes merely by agitating the pickling solution with low-pressure air. The latter was delivered through 3/16-inch diameter holes spaced 1 inch apart on a 2½-inch diameter brass pipe centrally located at the bottom of the vat.

A wiremaker in the East mentioned that by the installation of automatic temperature control instruments the cost of steam used for heating the pickling solution is reduced materially and the solutions are maintained at a more uniform temperature. Two methods used for heating nitric acid for pickling stainless steel rods were explained. A method followed by one company involves heating the rods before they are dipped. Another company keeps the nitric acid at pickling temperature by heating the kettle which is made of stainless steel.

Sulling is not necessary or essential in the wire drawing process according to the expression of various operators. The use of the sull coat today depends largely upon the needs of the customer, stated one producer, who explained that such a coating facilitated nail cutting and certain extrusion work. The opinion was advanced that the amount of soap retained by the wire during the drawing operation depends upon the thickness of the sull coat and lime built up in the cleaning house.

Companies using a light sull coat in their daily operations, he explained, are making a better product than when heavy sulling was employed. No more sulling is required than when the wire is drawn through tungsten carbide dies than when other type dies are used, one operator explained. He concluded with the statement that if sulling is required, the important thing is to secure a uniform coating if efficient results are expected in drawing.

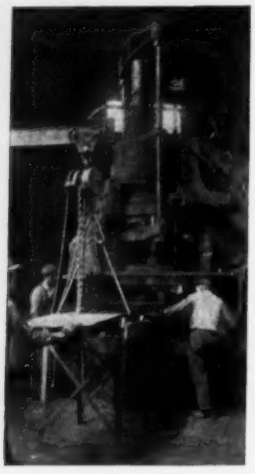
Tests Welded Specimens For Building Code Change

A feature of a recent meeting of the St. Louis Welding society was the testing of welded steel samples from 32 St. Louis industrial plants. The samples were pulled in the 40-ton tensile testing machine of the St. Louis Testing Laboratory. Average tensile strength of the specimens was 56,936 pounds per square inch with average elongation of 28.9 per cent.

The tests were made as a demontration in support of the society's sponsorship of a proposed revision of the St. Louis building code to permit fusion welding of steel structures. A later meeting of the society Nov 25 was devoted to a discussion of the revision of the code. Motion pictures of recently constructed welded steel dwellings were shown.

Officers for 1933 were elected as follows: President, E. P. Barnes, Moloney Electric Co.; vice president, R. G. Ellis, American Car & Foundry Co.; and secretary-treasurer, R. P. Hartnett, Arcade Welding Service.

Making the Most of



METHODS AND MATERIALS

MANUFACTURERS of steel floats used in connection with floating docks and wharves, are beginning to use stainless steel. The floats, made of plain-carbon steel, rust rapidly, especially in salt water, whereas welded, stainless steel floats have proved to stand up indefinitely under these conditions. In order to dim the lustre of cold-drawn stainless steel and give it the so-called satin finish which is more friendly to the eye, stainless wire is being dipped in a solution containing 8 per cent nitric and 2 per cent hydrofluoric acid.

\$ \$ \$

Presses of 100 to 750 tons capacity now are in general use in pressing malleable castings to size and shape. Using specially-designed dies, these presses form and straighten these castings, often holding them within tolerances of 0.005 and 0.010 inches. Frequently this pressing takes the place of machining and eliminates large items of cost.

\$ \$ \$

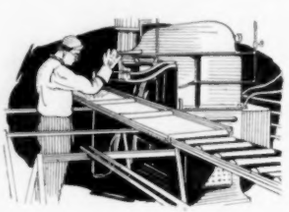
MORE than seven miles of welding will have been used in the construction of the new naval airship hangar at Sunnyvale, Calif., when it is completed. This structure will be approximately 1200 feet long, 308 feet wide and 225 feet high and will be not only one of the largest buildings in the world, but will be the largest without pillars or posts to support it. With an unobstructed floor area of nearly 300,000 square feet, the space could house five miles of freight cars. Laying of steel plate battledeck mezzanine floors the entire length of the building, one on each side, is the largest structural welding job performed in California. The floors consist of 3/16-inch plates, 2 by 12 feet, arc welded together. Splices between the plate ends are welded butt-strap joints, as are the longitudinal joints, except that in the latter case, the top flanges of supporting 3-inch I-beams serve as the strap. The 3-inch I beams are in turn welded to 20-inch I-beams. All welds in the floor plates are continuous and are ground flush with the top surface after completion. Welding of I-beams and splice plates underneath the floor is done by means of a traveling scaffold of welded pipe construction.

\$ \$ \$

Both a user of a tool and its manufacturer may derive considerable advantage from the decorative value of a chromium plated surface. A French engineer, in a paper read before a French scientific society, emphasizes the psychological effect of a bright, shiny, chromium-plated tool. He suggests that the workmen and tool crib attendant will consciously or unconsciously give it much better treatment and will be quite likely to keep it cleaner.

\$ \$ \$

Thyratron control for electric spot and projection welding is very similar to the line welding control. It allows only one impulse of power to pass for making one spot, shuts off, and the



circuit cannot be reclosed until the electrodes have been lifted from and again clamped on the work. It is possible to weld with a duration of any desired number of cycles depending upon the setting of the control.

\$ \$ \$

A large utilities company on the Pacific Coast discovered that a baffle bar in one of its condensers had corroded. Welding the bar was out of the question so a metal spray gun was brought into action and about 50 pounds of bronze wire was sprayed on the plate thus building up the entire corroded area. Another manufacturer is utilizing the spray gun to coat aluminum utensils and is said to be doing a highly satisfactory job with it. In the gun the wire of various metals is melted by oxyacetylene flame, atomized and sprayed on surfaces of metal and other materials.

\$ \$ \$

One of the main causes of faulty lubrication of antifriction bearings is the practice of using one lubricant for all the ball and roller bearings in the plant, regardless of temperatures or operating conditions. Theoretically, each application should have individual attention. Wide experience enables the lubrication engineer to make definite recommendation for any set of operating conditions.

\$ \$ \$

SHIMS made of bakelite are being experimented with for possible general application in railroad track sections. A steelworks in the Pittsburgh district has been trying out this new material on some standard rail sections which have been set up on its property for trial purposes in this connection. Steel or hemlock wood shims have been the most widely used heretofore, though claims of greater long-time resiliency are advanced for bakelite.

\$ \$ \$

When steam pipes are laid underground, the insulating capacity of the earth reduces the economical thickness of heat insulation. According to a German engineer, the insulation thickness as compared with a pipe in air can be reduced one-half, and the heat loss from underground uninsulated pipe should not be assumed greater than double the value of the heat loss of insulated pipes. The temperature of the ground around a pipe carrying steam at 350 degrees Fahr. is influenced for a distance of 16.4 feet. The temperature around the pipe is distributed, not in a circle, but in an ellipse with the larger axis horizontal and the smaller one displaced eccentrically downward. Tests indicated a conductivity of loamy earth of 4 to 4.8 B.t.u. per square foot per inch per degree Fahr. for the zone around the pipe.

Correct Grain + Correct Grade + Correct Structure = **Minimum Snagging Costs**

NORTON GRINDING WHEELS

OMIT or slight any item in this equation and you won't get the correct answer. The first two items you can easily get. The third, *correct structure,* you can get with Norton Bakelite Snagging Wheels. The structure (spacing of the grains) of Norton wheels is controlled, is varied by definite steps just as grain size and grade (bond strength) are varied.

It will pay you to try Norton Bakelite wheels —wheels that are exactly structured to the job that they must do in *your* foundry. See for yourself just how they can cut your costs.

NORTON COMPANY, WORCESTER, MASS.

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W-434

NORTON PRODUCTS—Grinding Machines; Lapping Machines • Grinding Wheels; Abrasives for Polishing; India Oilstones, Pulpstones • Laboratory Ware, Refractories; Porous Plates • Non-slip Tiles and Aggregates

Millions of buttons are given away during political campaigns, and national "drives," such as that for community funds. Their manufacture has been simplified greatly by printing direct on tin plate. The clip or "badge" made of steel, except for the card insert, is one of many types used to identify delegates to conventions, a heavy-duty practical kind, weighing about six times as much as a button

Large Uses of Steel In Small Ways

231st Article ◆ Lapel Buttons and Clips

ALMOST as far back as can be remembered, lapel buttons of some description have provided a popular means of identification. Political affiliations have been proclaimed for more than half a century through the wearing of a button or badge. Millions of buttons were worn by subscribers to the various Liberty loans during the war. Association and other group meetings frequently use lapel buttons, or clips for identification of members.

Print Directly on Metal

Steel is the material from which these emblems largely are made. The usual type of button, such as worn during the recent political campaign, is of simple construction, consisting of a shell and pin. Years ago the button was a more complicated article, being made up of five pieces and having the inscription printed on paper with a celluloid covering. This necessitated a means of fastening the various parts into a solid unit, and production was rather slow and expensive compared with the process of manufacture now generally practiced. Shortly before the World war a method was devised for printing the button design on the metal itself. This was made possible largely through developments in lithography.

Common practice in the manufacture of lapel buttons is to lithograph the design on a standard 20 x 28-inch sheet of 33-gage tin plate. This is coated with a substance which might be termed liquid celluloid and which serves to give the button a smooth surface in addition to permitting it to be formed without cracking the inscription. Individual buttons then are stamped from the sheet with the use of multiple dies, and finally the edge of the stamping is formed to permit insertion and retention of a brass pin. The stamping operation gives the curved surface to the face of the button.

During the recent presidential campaign there was a tendency toward the wearing of a lapel clip rather than the conventional button. The former consisted of a doubled piece of tin plate having the inscription applied direct to the metal or to a piece of cloth affixed to the plate. This type is clipped to the lapel and requires no pin.

Hundreds of Shapes, Sizes

The standard size button such as used for political campaigns, and in community fund drives is 13/16-inch diameter. Many of the buttons used in the presidential campaign, however, were only ⅝-inch, for those who wished a more subdued and refined label, and a more economical one.

But, some of the clips used to identify delegates to conventions are so large that those who run may read. That in the illustration is 2⅝ x 1⅜ inches, and is made of No. 28 gage steel, using as much metal as half a dozen of the standard size buttons. In stamping, the rectangular section, in which the typewritten identification card fits, is embossed in the plate; two diamond pointed "ears" are cut to hold the card in place; and a "tongue" is cut in the back of the plate, to clip to the lapel. Margins sometimes are embossed with fancy designs; ribbons frequently are attached, and sometimes not only a ribbon, but a medal. An endless variety has been developed by button and novelty manufacturers.

While millions of buttons and emblems are produced annually, it is difficult to determine the total tonnage of steel consumed in their manufacture. Recently, however, when political buttons provided a considerable volume of business, it is estimated roughly that more than a ton of tin plate was used monthly in the production of various lapel decorations.

New Uses Developed for Nonferrous Alloy

"Matrix" alloy containing 48 per cent bismuth, 28½ per cent lead, 14½ per cent tin and 9 per cent antimony, marketed by the Cerro de Pasco Copper Corp., 44 Wall street, New York, to some extent has displaced litharge and glycerine in mounting porcelain and glass in metal. It has been used to a considerable extent of late in joining porcelain and metal assemblies. It is also being used to join metal and glass tubing as for example in gasoline gages for motor cars and aircraft.

The alloy also is being used successfully by several aircraft companies as forming blocks for working up duralumin sheets. One sample sheet is hammered up and the alloy is poured into it. The pattern sheet is removed, after which identical sheets are dressed up on this block with a hammer. These blocks are standing up under severe usage and as many as 200 to 300 sheets have been dressed on them without deterioration.

A further new use for the alloy is in the form of dies for reproducing wood grain. The die-block is made by casting the alloy against the wood, the grain of which is to be reproduced. This is a simple operation for the reason that the alloy melts at 260 degrees Fahr. The resulting die then is pressed against fiber wood or composition to reproduce the wood grain.

New officers of the Washington Foundrymen's club, Seattle, are: President, F. W. McKenzie, Webster Brinkley Co., and secretary, Edward C. Gustin, 3716 Grayson street.

Scanning the Field of Technology

A Digest of Important Developments Pertaining to the Production, Processing, Application and Performance of Steel

Engineering Metal-Washing Equipment Installation

By F. C. Duston, in Machinery, October 1932, *p.* 138, 2 *pages,* 1 *illust.*

So many variable factors are involved in metal cleaning that nearly every job presents an individual or separate problem. Thus, most manufacturers have come to consider the planning and installation of metal-cleaning equipment as a job for engineers who specialize in such work. Data required by the Metalwash Machinery Co., New York, before planning an installation include: Substances that are to be removed from the parts to be cleaned; nature of previous and subsequent operations, and the method of handling the work; type of material from which the work is made; quantity to be washed per day or week; maximum and minimum sizes of work; space available for washing equipment; and facilities for operating the equipment.

Several types of metal-cleaning machines are described, including the flat conveyor-type, overhead conveyor-type, rotary-type and centrifugal-type.

—STEEL, 11-28-32

Corrosion Resistance of Iron-Chromium Alloys

By W. B. Arness and J. N. Ostrofsky in Transactions of the American Society for Steel Treating, November 1932, *p.* 429, 29 *pages,* 10 *illusts.,* 4 *tables.*

This discussion is based on an investigation of the resistance to the salt spray test of the low-carbon iron-chromium alloy analyzing about 0.10 per cent carbon and from 12.5 to 26.5 per cent chromium. An aqueous solution of 4 per cent sea salt is used. Test specimens were selected from commercial bar stock. Space is devoted to a discussion of the results in terms of variables inherent in the metal and in the test itself. The effect of various heat treatments is studied. In order to establish the normal quality of the test materials, tensile strength figures and nitric acid corrosion test results for the same materials are reported. A brief discussion of the mechanism of rusting under conditions of the salt spray test is included. Difficulties in interpreting test results exactly are pointed out, and the merits and limitations of the test are discussed. Attention is called to the generally excellent rust resistance of the entire range of alloys studied.

—STEEL, 11-28-32

Transverse Impact Strength Of Plain Carbon Steels

By M. W. Lightner and C. H. Herty Jr., co-operative bulletin No. 59 of Mining and Metallurgical Advisory boards, Pittsburgh, and Carnegie Institute of Technology, 34 *pages,* 11 *illusts.,* 9 *tables.*

The object of this investigation was to determine the factors affecting the impact strength of plain carbon basic open-hearth steels in the normalized condition, with particular reference to the effect of furnace practice upon these factors. Data show that, all other variables being the same, the amount of ferrite which transforms from austenite is the major factor in determining the impact strength of normalized steels. The impact resistance of steel is increased by an increase in the percentage of manganese in solid solution in the ferrite. In steels containing over 0.20 per cent carbon the shock resistance is lowered by increasing phosphorus content. Inclusions do not affect the dynamic properties of normalized steels unless there is an excessive amount of segregation directly under the notch.

—STEEL, 11-28-32

Gamma-Alpha Transformation In Wrought Iron

By R. H. Heyer, in Metals and Alloys, October 1932, *p.* 226, 6 *pages,* 26 *illusts.*

Many interesting observations have been made on the 900 degrees Cent. crystalline transformation of iron. In this research work, study was made of this gamma-alpha iron change in a short section of ¾-inch Aston process wrought iron pipe. Conclusions are that the temperature range of the gamma-alpha transformation in wrought iron is broader than that for purer iron; furthermore, the relatively high content of phosphorus and other impurities in wrought iron permits certain diffusions to take place in the temperature region of the transformation. As a result the positions of the alpha and gamma grain markings present during transformation may be observed at room temperature of the wrought iron is quenched in water from the transformation region. Aston process and hand puddled wrought iron have the same characteristics at the gamma-alpha transformation, it was noted.

—STEEL, 11-28-32

Corrugating Steel Ends For Freight Cars

By W. J. Tangerman, in American Machinist, Oct. 26, 1932, *p.* 1089, 3 *pages,* 4 *illusts.*

Fabricating half a million pounds of steel, and with only five men in the crew including the foreman, sounds like a man-killing job. Formerly it would have been, but complete mechanization of the process now permits such production regularly in an Indiana fabricating plant. The job is the corrugating of steel ends for freight cars, and the plates, which average 600 pounds each, vary from 5/32 to 5/16 inch in thickness, from 60 to 84 inches wide and from 118 to 130 inches long. The record run is 926 plates in 11 hours, an average of about 85 per hour. Equipment comprises a 12-burner oil furnace, a 2000-ton hydraulic press, the accompanying furnace loading, furnace passage, push-on, pull-off, cooling and stacking rigs, and two blowers, one for the furnace, the other for cooling press dies.

—STEEL, 11-28-32

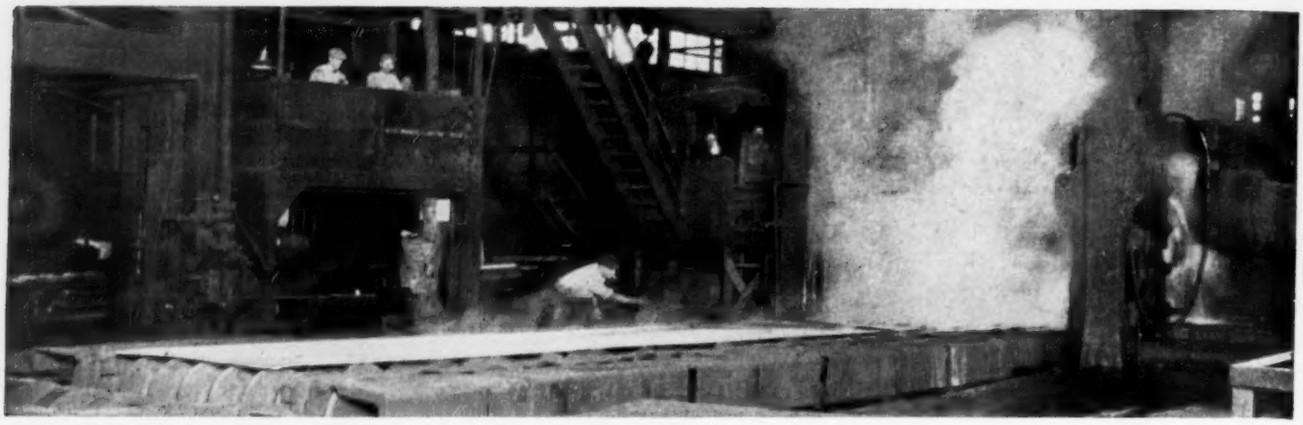
Standard Steel Samples of Known Nitrogen Content

Research paper No. 494, *Bureau of Standards Journal of Research, November* 1932.

As a result of an apparently increasing general interest in the determination of nitrogen in ferrous materials, the bureau of standards, Washington, has received numerous requests for iron or steel samples of known nitrogen content, for standardizing purposes. Accordingly the bureau has determined the nitrogen contents of four of the current standard samples, and these four samples, with nitrogen contents ranging from 0.005 to 0.028 per cent, are now available as standards for analysts interested in the determination of nitrogen.

Data are presented to show that the nitrogen contents of several standard samples of iron and steel have not changed during periods as long as 13 years. These data are offered in answer to the question that has been raised as to the permanence of the nitrogen content of the samples.

—STEEL, 11-28-32



PROGRESS IN STEELMAKING

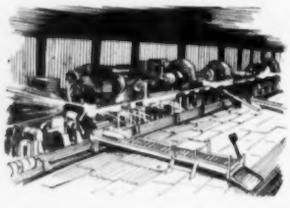
LEVELER rolls made of low-carbon nickel alloy steel and carburized by a special process to depths of about 3/16-inch are a recent development. The wearing surface contains about 1 per cent carbon and is hardened to 90 to 100 scleroscope. At one plant the new alloy composition rolls stayed in service eight times longer than high-carbon rolls. One leveler at this plant operated 4½ years before regrinding of the rolls was necessary. In addition to savings in direct costs, the officials estimated savings of 2040 hours for regrinding, 2125 hours for dressing with stone and 100 hours in time ordinarily lost in production while the rolls were being dressed.

♦ ♦ ♦

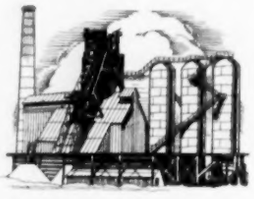
Addition of nitrogen to steel of low-carbon content increases the tensile strength, the elastic limit and brinell hardness number, but lowers the reduction of area and the elongation, according to recent tests.

♦ ♦ ♦

Two-ply stainless steel now is being manufactured in various gages and sizes from the composite ingot by a producer in the Chicago district. The process is said to have been developed to a point where a sound bond between the stainless steel and the carbon steel back is secured. The new product will be marketed for application requiring steels of stainless quality.



EMPLOYING variable voltage for feeding a hot saw and constant voltage for returning the carriage to its starting position has effected maximum production in the finishing department of a Pittsburgh district structural mill. A variable-voltage generator is coupled to the saw motor which furnishes current to the variable-speed feed motor, thus permitting feed control and quick return of the saw carriage.



WETTING down blast furnace charges with a predetermined quantity of water now is being accomplished by a recently developed metering device. When the valve motor has been started by the touch of a push button, a time relay holds the valve open a definite period depending upon the setting of an indicator on the rheostat. When the relay breaks the circuit the valve closes automatically and without any semblance of a water hammer. The device minimizes the quantity of flue dust thrown over into the dust catcher, affords a smoother working furnace and prolongs the life of the lining.

♦ ♦ ♦

A western manufacturer of coke has found that nickel-chromium cast iron ram shoes have a life several times as long as steel shoes formerly used. These shoes are made from a 65 per cent steel mixture of the following analysis: Total carbon 3.00, silicon 1.00, manganese 0.90, nickel 1.25 and chromium 0.25 per cent.

♦ ♦ ♦

Large steel companies, instead of buying new equipment, supplies and parts, are moving such materials when possible, from one plant to another. Some companies are going to the extent of shipping open-hearth roof linings from an idle to an active plant. In the same way, ladles, cinder buggies, locomotives and similar equipment are being transferred from idle plants to those in operation. While such practice tends to increase the cost of steelmaking on the books temporarily, the net effect is to keep more money in the companies' bank balance. It is expected, as a result of the extent to which steel plants are being stripped in this manner, that their management will be buying in a substantial way as soon as operations register an improvement.

♦ ♦ ♦

Dampening the vibration of lubrication pipe lines serving roll stands, pinion stands, pumps and other rolling mill machinery is effected by pieces of sheet lead installed between the clamps and the pipe.

♦ ♦ ♦

Flexibility and freedom from mechanical tripping fingers have been secured by a barmaker through the substitution of a photoelectric tube on a shear which cuts the hot product as delivered by the last stand of rolls to the cooling bed. As the leading end of the bar passes the photoelectric tube at a given point, the light given off causes timing relays to be actuated and the motor-driven shear to cut the bar after a definite time lapse. Varying the length of the cut piece to conform to specifications is accomplished readily by changing the time required for the relay to operate.

PRONOUNCED cutting of the skewback of an oil-fired open hearth has been eliminated by balancing the draft and incoming air for combustion.

NEW EQUIPMENT

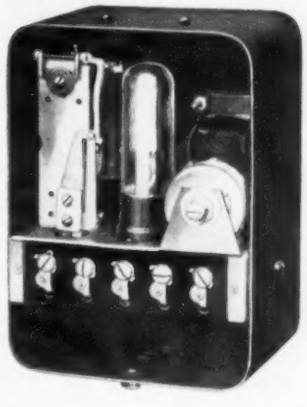
PRODUCTION FABRICATION TREATMENT FINISHING

Relay Operates on Quick Light Impulses

General Electric Co., Schenectady, N. Y., has developed a new photoelectric relay which operates on light impulses of one-fifteenth of a second duration. The unit shown, below, is applicable to installations where practically complete interception of the light beam is made, since changes of light intensity of at least 50 per cent are necessary for successful operation. The unit is particularly adaptable to counting applications and should also find use in the limit switch field.

The new relay, consists of a phototube, a pliotron amplifying tube, a sensitive relay, an adjustable potentiometer, and associated apparatus, all mounted on a steel base. It is used to control a circuit in response to an increase or decrease in the amount of light falling on the phototube.

A cover with one opening for the phototube and another for the potentiometer adjustment is provided with the unit. This cover is fastened to the case by means of a binding screw and dowel pins and is easily removed.



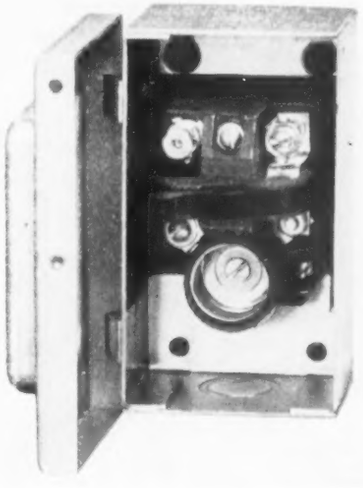
Photoelectric relay developed by General Electric Co.

◆

Compactness Features Front Operated Switch

Square D Co., Detroit, recently announced a small and compact front-operated switch designated No. 90211. While only 5⅜ inches high, 3⅛ inches wide and 2¾ inches deep, this small unit has a capacity of 30 amperes or 1 horsepower at 125 volts. It is a two-pole switch with one fuse, one blade and solid neutral. Front operation is obtained by use of a small disk, rotating between two spring copper blades. This feature permits a small size cabinet and convenient operation, without the necessity of providing for blade swing or a side operating handle.

The terminals of the unit, shown in the accompanying illustration, located conveniently to prevent the necessity of removing the interior for wiring. It is held in place by two screws which may be easily and quickly removed, however, if required. Despite its size, the switch is compact and offers generous wiring space. Sufficient knockouts are included in the cabinet to meet all types of installation.



Square D front-operated switch is small and compact

◆

Boring Unit Built in Single, Double-End Types

City Machine & Tool Works, East Third at June, Dayton, O., has developed a diamond or carbide boring machine for boring holes up to approximately 6 inches in diameter. It is built in both single and double-end types and with one or more spindles. This machine, shown herewith finds application for the boring of the larger sizes of pistons, connecting rods, motor frames, etc.

Boring machine announced recently by City Machine & Tool Works

Operation is semiautomatic in that the operator loads the work-holding fixture and pushes the starting button after which the cycle is automatic to its completion. Provision is made for quick traverse of the work to the boring tool, and in the case of interrupted bores for the quick traversing of the work across such gaps in the bore.

Pushing an electric button starts rotation of the spindle and also makes operative the hydraulic feed. The starting button is pushed by means of a sliding rod carried by a bracket on the table. As the table starts moving forward this rod slides through its bracket against the resistance of friction thereby keeping the starting button pushed down. At completion of the bore in the work a second stop carried by the table pushes the electric stop button.

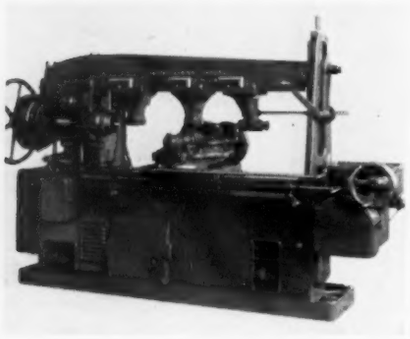
◆

Develops Spline Shaft Hobbing Machine

Barber-Colman Co., Rockford, Ill., has produced a new model hobbing machine which is especially suitable for the cutting of long spline shafts. The standard type A machine has been adapted for this work by the lengthening of the bed. Other parts of the machine such as the feed screw, the automatic stop rods and bars, the power shaft for the feed box, and the overhanging arm are lengthened accordingly. The outer end of the overhanging arm is raised and lowered by a screw driven from

the work spindle elevating mechanism.

The accompanying illustration shows the type of special tooling which is generally supplied for spline shaft work. Work spindle has a collet-type nose with a large handwheel for clamping the work firmly in the collet. Two work supports are mounted on the over-



Barber-Colman hobbing unit cuts long spline shafts

hanging arm, these consisting of half sleeves in which the work revolves and which will prevent long shafts from springing out of line during the cut.

◆

Feeler Gage Embodied in Tension Indicators

Martin-Decker Corp., 3431-45 Cherry avenue, Long Beach, Calif., has developed a new feeler gage designed to increase the efficiency of tension indicators manufactured by the company. With the addition of this gage, which is incorporated in the indicator, shown herewith, at a point underneath the clamping device, it is possible to determine exactly when the instrument is in correct position on the cable for an accurate reading.

Martin-Decker tension indicator designed with feeler gage

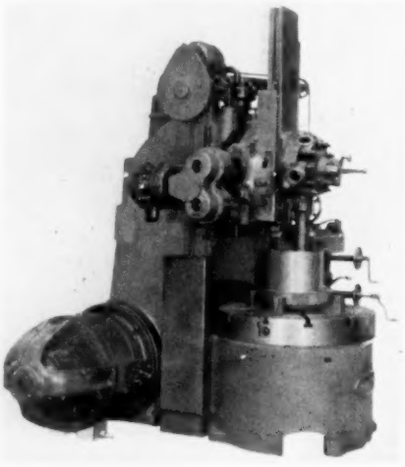
The feeler gage is a simple device, being designed as a knurl edged disk fitted beneath the V-blocks which receive the cable. As the clamps are tightened the disk may be turned freely with the thumb or forefinger until the correct pressure is applied. At this point, action of the disk automatically is retarded by friction against the block.

On the heavy-duty type indicator, an additional improvement which decidedly increases its efficiency has been made. On the new instruments, to eliminate the need for several deflection plugs to accomodate the different size lines under varying loads, a micrometer deflection adjustor and a saddle adjustor have been devised.

◆

Lathes Are Equipped for High-Speed Work

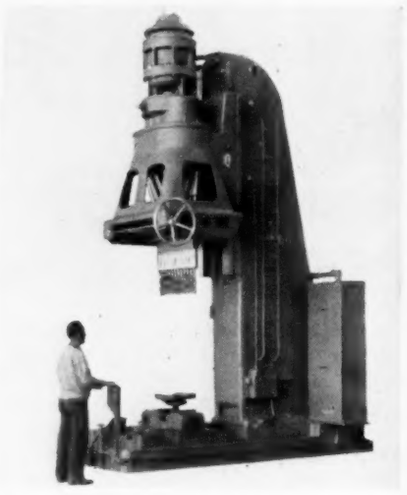
Bullard Co., Bridgeport, Conn., announces that the new completely motorized adaptation of its vertical



Completely motorized vertical turret lathe announced by Bullard Co.

turret lathes fits them primarily for high-speed work. It provides for the full advantages in the use of metalloid cutting tools, and in the case of the 42-inch machine, for example, it is possible to obtain table speeds ranging from 4.1 to 150 revolutions per minute. Illustrated above is the vertical turret lathe with flange mounted motor, showing the method of application of the power traverse and rail-raising mechanisms.

The main drive motor may be either a constant horsepower adjustable speed direct-current motor or constant horsepower multi-speed alternating-current motor having automatic control. To facilitate operation, the power traverse, rail-raising mechanism, and cutting lubricant system each are individually motorized. In addition, the lubricating system, by means of its own motor drive, provides a pressure lubrication of clean filtered oil to the spindle bearings. The lubricating pump motor is interconnected to the main drive control so that if for any reason the pump motor should cease to function, the main drive motor is cut off the line automatically.



Special hydraulic driller built by National Automatic Tool Co.

◆

Builds Special Vertical Hydraulic Driller

National Automatic Tool Co., Richmond, Ind., recently shipped a large special vertical hydraulic driller to be used to drill tube holes in large express-type boiler drums. The machine, shown above, is an adaption of the standard model D20H and is equipped with a semi-automatic hydraulic feed arranged with a safety foot control and emergency reverse.

This large heavy-duty multiple driller is equipped with a 24 x 40-inch rectangular head bored for 16 spindles and is equipped with 12 three-inch diameter upper joint assemblies each having a single speed and neutral position. Spindle equipment consists of an adjustable bearing plate arranged for and complete with twelve 2⅝-inch diameter spindles. The spindles are held in a straight line parallel to the ways on the column and have a horizontal adjustment toward and away from the column of 14-inches, the minimum and maximum distance being 22 and 36 inches respectively.

See Gentle Descent of Markets to Holidays

Industry Hopes To Retain Basic Gains of Fall Rise—Steel Rate Off to 17.5—First Quarter Prices Being Announced—28,000 Tons Shapes in 3 Federal Jobs

TRUSTWORTHY indicators now point to a progressively easier market situation in iron and steel over the remainder of the year, but with the deceleration likely to be moderate and remain within seasonal bounds.

In some products, the declines in demand noted the past two weeks have been temporarily arrested. Additional, though small, releases for automotive consumption reinforce this principal support of the market and assure substantial shipments to Detroit further into December than seemed probable.

Railroad and building steel needs, in the aggregate, continue disappointing, and already the blight of purchasing restricted because of the approach of the inventory season is felt. However, as the industry reappraises its outlook for the final stretch of the year, it is more confident of retaining the basic improvement of September-October and of resuming the upturn in the first quarter.

Confirming this improved sentiment, producers of finished steel are unusually early in announcing first quarter prices. Sheet prices have been reaffirmed with the exception of No. 24 hot-rolled annealed, advanced $2. Hot and cold-rolled strip quotations have been extended and bolt, nut and rivet and wire prices presumably will be shortly.

Completing the cycle in tin plate, prices for stock material have been lowered $2 per ton. Over the past month, a complete adjustment has been made in track material. Competitive situations in plates in the East and shapes in the Middle West indicate reconsideration of these products. It is evident that the industry is of a mind to eliminate uncertainty over prices as promptly as possible.

As for a number of weeks, sizable tonnages of structural material hang over the market but are slow to reach the rolling stage. Three federal building projects, aggregating 28,000 tons, are near the award stage, and bids will be asked about Dec. 1 on the 200,000 tons for the San Francisco-Oakland bridge. For spring highway construction, Indiana has opened bids on 1500 tons of concrete bars, while Illinois has 2000 tons up. Actual awards of structural shapes the past week totaled 8494 tons, and of concrete bars 2239 tons.

Railroads continue to release track fastenings at Chicago in encouraging volume, and to make fair commitments for plates, bars, bolts, nuts and rivets for equipment repairs, but rail programs for first quarter rolling appear contingent upon external conditions, one of them lower rail wages. It is reported that another wage reduction in steel plants also is under consideration.

A decline in steelmaking operations in the week ended Nov. 26, which under normal conditions would have been one point, was aggravated a half point by the Thanksgiving holiday. For that period, production was 17½ per cent. If Pittsburgh mills recoup the 2-point loss sustained last week, as now scheduled, an offset may be supplied to a seasonal easiness in other districts. Operations at Birmingham and Buffalo gained last week; all other districts declined one half to two points.

With the final cargo loaded, the lake movement of iron ore this year approximates 3,575,000 tons, compared with 23,497,686 tons a year ago, the latter including a small all-rail movement. Stocks at furnaces and Lake Erie docks Nov. 1, however, were 1,700,000 tons lower than a year ago.

A decline of 25 cents in No. 2X foundry iron at Philadelphia lowers the iron and steel composite of STEEL 1 cent to $28.91. The finished steel composite is steady at $46.70 and the scrap index at $6.83.

Composite Market Averages

			One Month Ago Oct., 1932	Three Months Ago Aug., 1932	One Year Ago Nov., 1931	Ten Years Ago Nov., 1922
Iron and Steel Composite	$28.91	$28.92	$29.32	$29.32	$30.61	$42.08
Iron and Steel Composite	$28.91	$29.32	$29.32	$29.32	$30.61	$42.08
Finished Steel Composite	46.70	46.70	47.64	47.46	48.17	59.01
Steelworks Scrap Composite	6.83	6.83	6.96	6.06	8.22	17.53

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plate, shapes, bars, hot strip, nails, tin plate, pipe. Steel Works Scrap Composite:—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Nov. 26, 1932	Oct., 1932	Aug. 1932	Nov. 1931
Pig Iron				
Bessemer, del., Pittsburgh	$15.76	15.76	15.76	17.76
Basic, valley	14.00	14.00	14.00	15.00
Basic, eastern, del. eastern Pa.	13.50	13.60	13.85	16.00
No. 2 foundry, del. Pittsburgh	15.76	15.76	15.76	17.76
No. 2 foundry, Chicago	15.50	15.50	15.50	17.00
*Southern No. 2, Birmingham	11.00	11.00	11.00	12.00
**No. 2X, Virginia furnace	17.75	17.75	17.81	18.00
**No. 2X, Eastern, del. Phila.	13.76	14.16	14.38	16.01
Malleable, valley	14.50	14.50	14.50	16.50
Malleable, Chicago	15.50	15.50	15.50	17.00
Lake Superior charcoal, del. Chi.	23.04	23.04	23.04	25.04
Gray forge, del. Pittsburgh	15.63	15.63	15.63	17.13
Ferromanganese, del. Pittsburgh	73.24	73.24	73.24	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

Coke				
Connellsville, furnace, ovens	1.75	2.00	2.00	2.35
Connellsville foundry, ovens	2.50	2.75	2.90	3.25
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	29.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	29.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	29.00
Wire rods, Pittsburgh	37.00	37.00	37.00	35.00

	Nov. 26, 1932	Oct., 1932	Aug. 1932	Nov. 1931
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.89
Iron bars, Chicago	1.65	1.65	1.65	1.65
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.75	1.75	1.75	1.76
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.60	1.60
Tank plates, Philadelphia	1.79½	1.79½	1.79½	1.80½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.70	1.85
Sheets, No. 24, hot ann., Pitts.	2.10	2.10	2.15	2.40
Sheets, No. 24 galvan., Pitts.	2.85	2.80	2.80	2.90
Sheets, No. 10 blue anneal., Chi.	1.85	1.85	1.85	2.00
Sheets, No. 24 hot ann., Chi.	2.25	2.25	2.35	2.55
Sheets, No. 24 galvan., Chi.	2.90	2.90	3.00	3.05
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Tin plate, per base box, Pitts.	4.25	4.75	4.75	4.75
Scrap				
Heavy melting steel, Pitts.	$9.00	9.50	8.55	10.25
Heavy melting steel, eastern Pa.	7.25	7.25	6.40	7.95
Heavy melting steel, Chicago	5.75	6.00	5.40	7.65
No. 1 wrought, eastern Pa.	7.25	7.25	6.25	9.50
No. 1 wrought, Chicago	5.25	5.25	4.00	8.00
Rails for rolling, Chicago	8.25	8.00	6.50	10.00

Sheets

Advance in Black Sheets Only Change for First Quarter—Automotive Shipments Ease

SHEET PRICES, PAGE 41

Pittsburgh — Following the announcement in STEEL, Nov. 21 of an unchanged first quarter market for cold rolled sheets, hot rolled sheet prices for that period were announced last week. No. 24 gage have been advanced to a 2.20c minimum, with 2.30c for less-carload consumers, an advance of $2 from the present market of 2.10c to 2.20c. No. 10 hot rolled sheets continue 1.55c for the first quarter, and No. 10 blue annealed, 2.70c. Galvanized sheets also will be unchanged at 2.85c. The autobody grade may be obtained at $3 a ton over the price of No. 20 cold rolled. A decision to establish one grade of automobile stamping quality sheets may be an early development. Tin mill black sheets have been reaffirmed at 2.30c as minimum. Demand for all grades was easier last week.

New York — Sharon Steel Hoop Co., Sharon, Pa., is low bidder on approximately 1400 tons of full pickled cold rolled sheets to be used for automobile license tags for New York. Normally the state's requirements are about twice this amount. Connecticut closed recently on about 175 tons of tag stock.

A large tonnage of galvanized sheets for air ducts will be required for the air conditioning system to be installed in the RCA building, Rockefeller Center, here.

The contract, involving more than $1,000,000, has been awarded by Rockefeller Center Inc. to the Carrier Engineering Corp., New York. It is reported as the largest contract on record for air conditioning. Nearly 15 miles of duct work, and more than 1000 outlets and returns will be installed.

Philadelphia—Pending action by leading sellers on sheet prices for first quarter, the market continues at recent levels. However, it appears there will be little change, except for an effort to establish No. 24 hot rolled annealed at 2.20c, base, Pittsburgh.

Cleveland—Pressure for rush shipments of automobile sheets, noted in recent weeks, has subsided, though specifications on orders continue to be received, and in some instances additional buying is apparent for fill-in requirements. One builder, not in the General Motors group, is planning to spread its production schedules over a longer period than anticipated to provide winter work. Mill operations during the week were sustained at the same rates as in the preceding week. Some automotive consumers wanted protection at recent quotations for the first half of 1933. Tin mill black has been more active for low-priced enamel ware for the Christmas trade. Sellers here now are quoting 2.20c to 2.30c, base, Pittsburgh, for No. 24 hot rolled annealed sheets, for first quarter, up from 2.10c to 2.20c.

Cincinnati — Sheet consumers show more interest in covering for first quarter. A moderate improvement in automotive demand is noted.

Chicago — Producers are expected to follow the lead in advancing hot rolled annealed sheets $2 a ton for first quarter, to a range of 2.30c to 2.40c. Other quotations are expected to continue at present levels. Business recently has been slow and lighter than a month ago. Mill operations average around 15 per cent.

Birmingham, Ala. — Production has been stepped up slightly, but is not back to the rate maintained earlier in November.

San Francisco—Morris, Wheeler & Co., Philadelphia, and S. Weinstein Supply Co., New York, are low for the bulk of 125 tons of galvanized sheets for Mare Island, Calif., navy yard.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, delivered	1.70c
New York, delivered	1.90c
Birmingham, base	1.70c
Philadelphia, delivered	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, delivered	2.01c
New York, delivered	2.05c
St. Louis, delivered	2.04c
Birmingham, base	1.85c
San Francisco c.i.f.	2.32½c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.10c to 2.20c
Gary, Ind. Harbor, base	2.20c to 2.30c
Chicago, delivered	2.25c to 2.35c
New York, delivered	2.45c to 2.55c
Philadelphia, del.	2.41c to 2.51c
Birmingham, base	2.35c
St. Louis, delivered	2.54c
San Francisco, c.i.f.	2.85c
Detroit, delivered	2.28½c

GALVANIZED NO. 24

Pittsburgh, base	2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, delivered	3.00c
Philadelphia, delivered	3.16c
New York, delivered	3.20c
Birmingham, base	3.00c
St. Louis, delivered	3.19c
San Francisco, c.i.f.	3.50c

AUTOBODY NO. 20

Pittsburgh, base	2.55c to 2.65c

FURNITURE

Pittsburgh, No. 10 heavy	2.40c to 2.50c
Pittsburgh, No. 20 light	2.90c to 3.00c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.30c
Gary, base	2.40c
St. Louis, delivered	2.67½c

HEAVY COLD ROLLED NO. 10

Pittsburgh, base	2.00c
Gary, Ind. Harbor, base	2.10c
Chicago, delivered	2.15c
Philadelphia, delivered	2.31c
New York, delivered	2.35c

COLD ROLLED NO. 20

Pittsburgh, base	2.50c
Gary, Ind. Harbor, base	2.60c
Chicago, delivered	2.65c
Philadelphia, delivered	2.81c
New York, delivered	2.85c

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing (9-11 gage)	$55.00
(12½ gage and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.60c
*Philadelphia, del.	1.69½c to 1.79½c
*New York, delivered	1.80c to 1.90c
*Boston, delivered	1.92c to 2.02c
Buffalo, delivered	1.85½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Birmingham, Ala. base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	2.00c
St. Louis, delivered	1.94c

Structural Shapes

*Pittsburgh, base	1.50c to 1.60c
Philadelphia, delivered	1.75c
New York, delivered	1.87c
Boston, delivered	2.00½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, Ala., base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, delivered	1.91c
New York, delivered	1.95c
Boston, delivered	2.02c
Pittsburgh, cold finish	1.75c
Pittsburgh, forg. qual.	1.85c
San Francisco, c.i.f.	2.10c

RAIL STEEL

Chicago Heights	1.50c
Eastern mills	1.35c

IRON

Chicago, base	1.60c to 1.65c
New York, delivered	1.85c to 1.90c
Philadelphia, delivered	1.81c to 1.86c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.60c
Chicago, billet	1.50c to 1.60c
*Chicago, rail steel	1.20c to 1.30c
Philadelphia, cut lengths	1.86c
Cleveland, cut lengths	1.75c

Cold-Finished Bars, Shafting

Base, Pittsburgh

10,000 to 19,999 pounds	1.70c
20,000 to 59,999 pounds	1.65c
60,000 to 99,999 pounds	1.60c
100,000 pounds and over	1.57½c

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Tin and Terne Plate

Per 100-pound box, Pittsburgh

Tin plate, coke base, cont.	$4.25
*Tin plate, coke base, stock	3.75
Long ternes, 24, unassorted	2.80

Gary, Ind., base 10 cents higher

Alloy Steel

Hot Rolled—F.o.b. Pittsburgh, Buffalo, Chicago and Massillon, O.
Hot rolled; base 2.45c to 2.65c, mills; differentials to various consumers

Alloy	Diff.	4600 .20 to .30 Mo.	
S.A.E.		1.25-1.75 Ni.	1.05
2000	0.25	5100 .80 - 1.10	
2100	0.55	Cr.	0.45
2300	1.50	5100 Cr.	
2500	2.25	spring	0.20
3100	0.55	6100 bars	1.20
3200	1.35	6100 Spring	0.95
3300	3.30	Cr., Ni., Van.	1.50
3400	3.20	Carbon van.	0.95
4100 .15 to .25		9250 (flats)	0.25
Mo.	0.50	9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16 in. wide Pitts.	1.45c
Do., Chicago	1.55c
Do., del. Philadelphia	1.76c to 1.81c
Do., del. New York	1.80c to 1.85c
Cooperage hoop, Pitts.	1.55c to 1.60c
Do., Chicago	1.65c to 1.70c
Cold-roll, strip, Pitts., Cleve.	2.00c
Worcester, 3 tons over	2.20c

Rivets, Wrought Washers

Struc., c.l., Pitts-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. and smaller, Pitts., Chicago, Cleveland	70, 10 and 5 off
Washers, c.l., Pitts. dist.	$6.50 to 6.75 off
Do., Chicago district	7.00 to 7.50 off

Rails, Track Material

Standard rails, mill	$40.00
Relay rails, Pitts, 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	23.00 to 25.00
Light rails, 25-45, mills	$30.00
Light rails, Chicago	$32.00
Angle bars, mills	2.55
Spikes, railroad, mills	2.40c
Spikes, boat, barge, Pitts.	2.65c
Track bolts, Chicago	3.50c
do., standard, jobbers	73 off list
Tie plates, Pitts.	$35.00
Tie plates, Chicago	$35.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 75 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 75 off
Tire bolts ..... 60 and 10 off
Stove bolts, 77½, 25 and 10 off in pkgs.; 86 off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 75 off

HEXAGON CAP SCREWS

Milled ..... 80-25 off
Upset 1 in. diam. and smaller 80-25-10 off

SQUARE HEAD SET SCREWS

Upset, 1 in. and smaller ..... 75-10-10 off
Headless set screws ..... 75-10 off
Upset, larger than 1 in. ..... 75-10 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh	$2.50
Do., less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Steel sheet piling, Pitts.	1.90c

Bars

Automotive Orders Balance Lessened Buying by General Consumers—Prices Are Steady

BAR PRICES, PAGE 41

Chicago—A slight improvement in steel bar demand from the automotive industry is insufficient to offset a decline in requirements of miscellaneous consumers, although total changes are small. Tractor manufacturers and builders of other farm machinery are commencing to show more activity, although steel orders have changed little over the past several weeks. International Harvester Co. is adding 4000 employes at its various plants during the winter and early spring months but this calls for only a small increase in production. International is preparing for the production of a new small tractor and will manufacture bodies for a new ½-ton truck to be built largely by the Willys-Overland Co. Bar specifications from railroads are fairly steady in small lots. Deformed bar shipments are declining seasonally as the result of curtailed activity in road construction. Soft steel bars are steady at 1.70c, Chicago, with rail steel 1.50c.

New York—Commercial steel bars are moving slowly, with the principal consuming groups in this district practically out of the market. A slight improvement in railroad demand for repair work is expected, however. Prices are 1.60c, Pittsburgh, with common iron bars 1.50c to 1.55c, Pittsburgh.

Philadelphia — Commercial steel bars are weak at 1.60c, Pittsburgh, and trading is at a standstill. Iron bars are 1.50c, Pittsburgh.

Pittsburgh—Plans of a leading automotive maker to specify bars as well as other steel products soon for delivery after Jan. 1 on a manufacturing program which calls for 120,000 cars in January and February, will be of benefit soon to bar mills in this district. In general, bar specifications have been little changed the past week. One mill still is booking more orders than a month ago for both alloy and carbon bars but bar specifications to larger mills are reversing this showing. Disclosure of a first quarter price is expected to reveal a continuation of the present 1.60c market.

Cleveland—Inquiries have come out for commercial steel bars for first quarter, and though no prices have been established there is some intimation from outside mills of a willingness to extend the present 1.65c, base, Cleveland market. A better volume of buying is expected to develop immediately after the approaching inventory season. The number of small, miscellaneous manufacturing orders has crept up recently, and the situation as a whole has a better appearance, though current volume is not so large as early in November, and shipments to the automotive industry have slowed up.

Cold-Finished Buying Shows Some Decline

Cold Finished Prices, Page 41

Pittsburgh—Sales and shipments of cold-finished bars declined somewhat last week after two weeks of fair business which measured up to the corresponding October volume. Possibility of purchase of cold-finished steel from a leading automobile manufacturer is expected as its early 1933 schedules have been tentatively announced. The base price of 1.70c is well observed for 5 to 10-ton lots. In the absence of forward inquiry, no 1933 price announcement has been made.

Stock Tin Plate Price Also Reduced

Tin Plate Prices, Page 41

Pittsburgh—Favorable reception has been accorded the new $4.25 contract base price for coke tin plate. Specifications for early 1933 delivery at this price are not expected in quantity before December. The price of stock tin plate, announced by a leading producer, will be $3.75, base, Pittsburgh, and $3.85, Gary, Ind. This represents a reduction of 10.00c per 100 pounds. The spread between contract and stock material thus becomes 50.00c instead of 90.00c. Last week tin mills reported little increase in volume for immediate production or specifications for early 1933 delivery to canmakers. Follansbee Bros. Co. Inc. resumed at Follansbee, W. Va., on the production of tin plate and sheets.

New York—Pending appraisal of next season's requirements, canmakers are contracting slowly, notwithstanding the recent price reduction.

Plates

Small Miscellaneous Requirements Predominate — Plates Placed for 85 Helium Tanks

PLATE PRICES, PAGE 41

Pittsburgh—Plate mill specifications and new orders are small. River barge work is proving only a moderate outlet. A district mill has received a sizable tonnage of plates and other hot rolled products for a brewing machine manufacturer in the West. The base of 1.60c, Pittsburgh, for plates is nominal but unchanged.

Boston—Plate demand has declined. Leading consuming industries are taking little material. A small tonnage is going into bridge work. Prices are inclined to weakness in some directions.

New York—Plate prices are unsettled, though early clarification is expected. Most producers quote 1.70c, Coatesville, on carlots. As practically all the demand at this time is of an urgent character, the total volume of buying has been maintained. One or two leading sellers report an increase.

Philadelphia—Plate buying is spotty. Prices appear weaker and unsettled, with the possibility of better definition soon. Reading railroad has distributed 600 tons of plates to eastern mills, leaving about 100 tons yet to be placed.

Cleveland—Orders are scarce and small, and volume much less impressive than a month ago. Railroads evidently have covered repair requirements for the remainder of the year, and shipments to them have tapered. Some important platemakers say practically nothing developed in the past week from this source. It is indicated that inquiries for first quarter, when they develop in December, will be quoted the present base of 1.60c, Pittsburgh.

Chicago—Plate demand continues quiet, little change being noted in requirements of railroads, car builders and tank fabricators. Pending work for tanks is slow to be closed and line pipe inquiry is light. Car repair work is taking only small

lots of plates. The market is 1.70c, Chicago.

San Francisco—Alan Wood Steel Co., Conshohocken, Pa., has been awarded 389 tons of steel plates for the Mare Island, Calif., navy yard. The material is for a destroyer to be built there.

Contracts Placed

865 tons, pontoons and suction pipe for United States engineers, St. Louis Structural Steel Co., St. Louis, and Alco Products Co. Inc., New York.

454 tons, 85 helium storage tanks, Sunnyvale, Calif., to A. O. Smith Corp., Milwaukee.

433 tons, oil barges for Chicago district engineers, to Midland Barge Co., Midland, Pa.

389 tons, navy, Mare Island, Calif., to Alan Wood Steel Co., Conshohocken, Pa.; bids Oct. 25, schedule 8857.

115 tons, plates and shapes, mainly plates, for Panama, to Central Iron & Steel Co., Harrisburg, Pa., and Bethlehem Steel Export Corp., New York.

100 tons, bottom plates for repairs to steamship CATHWOOD, Oakland, Calif., to Moore Drydock Co., Oakland, Calif.

Unstated tonnage, 70-foot steel barge, United States engineer, Jacksonville, Fla., to Midland Barge Co., Midland, Pa.; $8700, bid price; $250 additional, time adjustment; total adjusted bid, $8950.

Contracts Pending

1150 tons, 48-inch pipe, District of Columbia, Washington, water commissioners; Peter & A. J. Ellis, Philadelphia, low for general contract.

125 tons (sheet steel piling and liner plate) Puget Sound, Wash., navy yard; Rumsey & Co., Seattle, general contractor.

Unstated tonnage, 60,000-gallon tank, Fort Barrancas, Fla.; Schofield Iron Works, Macon, Ga., low. Bids Nov. 10.

Unstated tonnage, for 3234 feet of 60-inch pipe, penstocks, Wapato, Wash.; bids Dec. 8.

Unstated tonnage, 500,000-gallon tank, Roanoke Rapids, N. C.; bids Dec. 12.

Unstated tonnage, 250,000-gallon stand pipe, Hamilton field, Calif.; bids Dec. 16.

Alloy Steels Firm

Alloy Steel Prices, Page 41

Hot rolled alloy steels are firm at 2.45c to 2.65c, base, mills, the former being the more general price to quantity consumers. Volume recently has risen on the demand from automotive builders, and was slightly better in the past week than in the week preceding. Producers are hopeful of a steady market from this source. Some inquiries are being received from the oil industry.

A. Leschen & Sons Rope Co., St. Louis, has been awarded 15,500 feet of wire rope for government engineers at Memphis, Tenn., for $3721, and 3200 feet for $704.

Railroads

Track Fastenings and Car Work Give Best Orders—Rail Needs Not Being Covered Yet

TRACK MATERIAL PRICES, PAGE 41

Chicago—Releases against orders for track fastenings are well maintained, while small releases of rails permit a continuation of recent light operations at one rail mill in the district. New rail buying is lacking, however, and inquiry also is absent. Pending work in the freight car market is limited to 200 hopper cars for the Chicago Great Western railroad. Specifications for various steel products for repair and maintenance work are steady, but only small lots are involved.

New York—Apart from small conversion work, demand for rolling stock in this district is at a virtual standstill. Little has been placed so far this month, with indications for the remainder of the year far from promising. Conversion work includes the changing of 20 hopper cars into bulk cement cars by the Lehigh & New England and the changing of four freight locomotives into switch engines by the Delaware, Lackawanna & Western at its Scranton, Pa., shops. New York Central will take on 1500 additional men Dec. 1 at its car shops at East Buffalo, N. Y., and Indianapolis to work on its recently announced car repair program. Following the recent release of 6000 tons by the New York Central to the Illinois Steel Co. against an old contract, rail buying here is featureless.

Philadelphia — Reading railroad has closed for 600 tons of plates for car repairs with three eastern mills. It still has 1000 tons to place.

Pittsburgh—In spite of the proximity of the year's close, leading railroads have not given steel mills indication of their early 1933 needs. Rail and fastening needs are either not being estimated or estimates are being delayed. The only recent activity is in blanket contracts by railroads on their bar, plate and shape requirements, but these tonnages are inconsequential. Several car shops are releasing a few miscellaneous tonnages, including some fair rivet and bolt orders. The Pennsylvania railroad is proceeding rapidly with the 1285 box cars it is building at three shops. Last week the first one of 400 to be built at the Pitcairn, Pa., shops was completed. Four daily will be made this week. About 125 men have been employed in this car shop division. Lacking test, new rail fastening prices are 2.40c for large spikes, 1.75c for tie plates and 2.55c for angle bars. Standard rails nominally are $40 per ton.

Locomotives Placed

Delaware, Lackawanna & Western conversion of four freight locomotives into switch engines at its Scranton, Pa., shops.

Car Orders Pending

Lehigh & New England, conversion of 20 hopper cars into bulk cement cars.

Wire Orders Easier as Inventory Period Nears

Wire Prices, Page 41

Chicago — First-quarter prices of wire products are to be announced shortly, with the market expected to be continued at recent prices of $2 in carloads for wire nails and 2.25c, Chicago, for plain wire. Specifications recently have been fairly steady, changes in shipments over the past several weeks having been slight. Demand from agricultural districts remains slow, while automotive consumption is well maintained. Manufacturers of bed springs are active and taking fair-sized wire tonnages. Requirements of some miscellaneous consumers are declining.

Worcester, Mass.—Wire demand with most mills is gradually declining, slower buying being reflected in practically all departments. Prices are unchanged and steady. Jobbers are not inclined to buy more than fill-in requirements, due to approaching inventory.

Philadelphia—Improved demand from jobbers is a future of the wire market.

Pittsburgh—A shade easier demand for nails and manufacturing wire as well as for other wire products comes from approaching inventory periods and inactivity in trade occasioned by last week's holiday.

A government bill in the Peruvian congress provides for selling iron ore from the Marcona district, the government to participate in profits, using the proceeds to pay off the foreign debt of Peru.

Structural Shapes

28,000 Tons to Be Purchased Shortly for Three Government Jobs — More Federal Projects Due for Figures About Jan. 1—Low Fabricated Prices Noted

STRUCTURAL SHAPE PRICES, PAGE 41

New York—Bridges in New York state, on which bids close Dec. 6, take 1400 tons of shapes. Several large federal projects are due out about the first of the year; also, a part of the New York Central railroad's St. John's Park terminal. Bids on the addition to the Jersey City, N. J., postoffice have been rejected. A hearing is to be held in Washington on a protest regarding handling charges on shipments requiring railroad power cranes and equipment which add 50 cents per ton for unloading structural material.

Boston—Pending bridge and other public work accounts for more than 1000 tons, including about 500 tons for a span across the Merrimack river in New Hampshire. Bids are in on the New London, Conn., postoffice. Awards are light.

Philadelphia—The market is easier, although plain material usually is 1.70c, base, nearest mill. Demand is slow, except for the substantial federal jobs previously noted.

Pittsburgh — District fabricators are competing for three large government jobs, including the Cleveland postoffice, 11,500 tons; the 8500-ton Philadelphia customs house, and the 8000-ton Washington Archives building. Steel sheet piling will be required for several government jobs to be announced soon. Steel for the 4500-ton Cincinnati postoffice, fabricated by McClintic-Marshall Corp., is being shipped by the all-water route from the company's Pittsburgh plant. The first barge load of this structural steel left Pittsburgh last week.

Cleveland—Though plain material continues nominally 1.60c, base, Pittsburgh, fabricators note extremely low bids recently for construction jobs in this district, indicating much lower prices for plain material or unprofitable fabrication figures. This was especially true in the bidding for the Cleveland postoffice, requiring 11,500 tons, still being negotiated, though some fabricators who have been endeavoring to stabilize the market here say it also pertains to 25 and 50-ton jobs. Brookville Bridge Co., Brookville, O., has been awarded 192 tons for the Butler-Preble counties, Ohio, bridge. A. W. Kutsche & Co., Detroit, have taken the geneal contract for the Springfield, O., postoffice, requiring 430 tons; and Charles Shutrump & Sons Co., Cleveland, are low on the general contract for the Binghamton, N. Y. armory, 410 tons.

Chicago—Structural awards consist principally of bridge work requiring 100 to 300 tons at a time. Action on most of the larger projects pending recently is lacking, while new inquiry is light. Fabricators' backlogs are declining.

Contracts Placed

845 tons, postoffice, Jackson, Miss., to Ingalls Iron Works Co., Birmingham, Ala.; through Penker Construction Co., Cincinnati.

670 tons, state bridge over St. Francis river near Madison, Ark., to Wisconsin Bridge & Iron Co., Milwaukee.

620 tons, highway bridge, Montana, to Minneapolis-Moline Power Implement Co., Minneapolis.

540 tons, state bridge work; 240 tons to Shippers' Car Line Inc., Milton, Pa.; remainder distributed among various other fabricators.

395 tons, Owyhee irrigation project, Nyssa, Oreg., to Hardie-Tynes Co., Birmingham, Ala., and American Locomotive Co., Dunkirk, N. Y.

348 tons, San Simeon bridge for California, to Consolidated Steel Corp., Los Angeles.

350 tons, addition to Jewish hospital, Philadephia, to Belmont Iron Works, Philadelphia.

325 tons, bridge and approaches, Denver Rio Grande railroad, Colton Utah, to Provo Foundry & Machine Co., Provo, Utah; J. W. Whiting, Springvale, Utah, general contractor.

300 tons, welded bridge decking, Michigan state highway department, to A. O. Smith Corp., Milwaukee.

292 tons, bridges, Hamilton county, Texas, S. A. P., 975-C, to Austin Bros., Dallas, Tex.; Austin Bridge Co., Dallas, general contractor.

250 tons, bridge, Elgin, Joliet & Eastern railroad, to American Bridge Co., Pittsburgh.

240 tons, addition, general exhibition building, World's fair, Chicago, to American Bridge Co., Pittsburgh.

200 tons, highway bridge, Illinois, to McClintic-Marshall Corp., Bethlehem, Pa.

200 tons, bridges, Denton and Harrison counties, Texas, to P. M. Skinner, Dallas, Tex.; Public Construction Co., Denton, contractor for Denton work.

192 tons, state highway bridge between Butler and Preble counties, Ohio, to Brookville Bridge Co., Brookville, O.

190 tons, state bridges, Oneida and Ulster counties, New York, to Lackawanna Steel Construction Corp., Buffalo.

175 tons, highway bridge, Perry county, Oklahoma, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

162 tons, including 62 tons of concrete bars, state bridge, Tuscarawas county, Ohio, to Truscon Steel Co., Youngstown, O.

157 tons, state bridge near Alpine, San Diego county, California, to Consolidated Steel Corp., Los Angeles.

150 tons, riding academy, Ft. Meade, S. Dak., to Gate City Iron Works, Omaha, Nebr.

150 tons, highway bridge, Indiana, to Central States Bridge & Structural Co., Indianapolis.

150 tons, bridge, Wananucka, Johnston county, Oklahoma, to Capitol Steel & Iron Co., Oklahoma City, Okla.; W. R. Lowe, Oklahoma City, general contractor.

150 tons, office addition, Worthington Pump & Machinery Corp., Harrison, N. J., to A. E. Smith & Sons Co., Newark, N. J.; F. M. Waldron Inc., Newark, general contractor.

148 tons, bridges, Caldwell-Guadelupe counties, Texas, F. A. P., E-79, to Petroleum Iron Works, Beaumont, Tex.; Austin Bridge Co., Dallas, general contractor.

140 tons, bridges and approaches, route No. 106, Windsor county, Vermont, to Kittridge Bridge Co., Concord, N. H.

135 tons, state bridge, Laurel county, Kentucky, to Mt. Vernon Bridge Co., Mt., Vernon, O.

130 tons, Pennsylvania railroad bridge, Metuchen, N. J., to McClintic-Marshall Corp., Pittsburgh.

130 tons, bridge, Zekiah swamp, Maryland, to McClintic-Marshal Corp., Pittsburgh; through Mullan Contracting Co., Baltimore.

125 tons, postoffices, Ellwood City, Pa., and Beckley, W. Va., to Guibert Steel Co., Pittsburgh.

120 tons, highway bridge, Grangerville, Idaho, to Minneapolis-Moline Power Implement Co., Minneapolis.

115 tons, state bridge over Western Pacific railroad tracks, Salt Lake county, Utah, to unnamed interest.

100 tons, postoffice, Sheboygan, Wis., to A. F. Anderson Iron Works, Chicago.

100 tons, highway bridge, Franklin county, Illinois, to Vincennes Bridge Co., Vincennes, Ind.

100 tons, Culver boulevard crossing, Los Angeles county, California, for state, to Consolidated Steel Corp., Los Angeles.

Awards Compared

	Tons
Awards, week ended Nov. 26	**8,494**
Awards, week ended Nov. 19	**20,393**
Awards, this week in 1931	**24,659**
Av. weekly awards, 1931	**34,236**
Av. weekly awards, 1932	**16,197**
Av. weekly awards, Oct.	**29,641**
Awards, to date, 1931	**1,687,121**
Awards, to date, 1932	**777,465**

100 tons, beams for trunk sewer, Yonkers, N. Y., to Empire Architectural Iron Works, Bronx (N. Y.); through Thomas Crimmins Co.

Contracts Pending

2300 tons, appraisers' store, Baltimore; Consolidated Engineering Co., Baltimore, low for general contract.
2000 tons, postoffice, Norfolk, Va.; Consolidated Engineering Co., Baltimore, general contractor.
1500 tons, United States appraisers' stores, Baltimore; Consolidated Engineering Co., Baltimore, low, $759,000; bids Nov. 18.
1400 tons, state highway bridges, New York; bids Albany, Dec. 6.
950 tons, postoffice, Beaumont, Tex.; Algernon Blair, Montgomery, Ala., awarded general contract.
750 tons, addition, marine hospital, Norfolk, Va.; Otto Misch Co., Detroit, low for general contract.
700 tons, addition to postoffice, San Francisco; bids Dec. 28.
600 tons, six Illinois highway bridges; bids Nov. 30.
500 tons, spans for Bonner Ferry bridge over Kootenai river, Idaho; bids Dec. 1.
500 tons, postoffice, Oak Park, Ill.; Largura Construction Co., Gary, Ind., contractor.
430 tons, postoffice, Springfield, O.; general contract awarded to A. W. Kutsche & Co., Detroit.
410 tons, armory, Binghamton, N. Y.; Charles Shutrump & Sons Co., Cleveland, low for general contract.
378 tons, locks and dam, Tennessee river near Decatur, Ala., for United States engineers, Chattanooga, Tenn.; Stevens Bros. & Miller Hutchinson Co., New Orleans, La., low.
315 tons, highway viaduct, Fall City, Nebr.
300 tons, immigrant station, Honolulu; J. L. Young Engineering Co., Honolulu, low for general contract.
275 tons, hospital, Barksdale Field, Shreveport, La.; Henry B. Ryan Co., Chicago, general contractor.
250 tons, postoffice, New Castle, Pa.; A. W. Kutsche Co., Detroit, low for general contract.
227 tons, 5-span bridge, Washington county, Pennsylvania; Rust Engineering Co., Pittsburgh, low.
223 tons, state bridges, Bryan county, Oklahoma; bids Nov. 29.
200 tons, shapes and bars, toll bridge; R.F.C. loan of $600,000 to Tampa-Clearwater Bridge Co., Tampa, Fla., authorized.
200 tons, postoffice, Ponca City, Okla.; general contract awarded to Rosen & Fischel Inc., Chicago, on bid of $161,715.
167 tons, 1590-foot steel truss bridge, Forest county, Pennsylvania; Ortale Construction Co., Pittsburgh, low.
125 tons, Superior street bridge at Wisconsin Dells, Wis.; Kramp Construction Co., Berlin, Wis., low for general contract at $28,350.
125 tons, addition, Bancroft school, Washington; Maas Construction Co., Baltimore, low.
116 tons, including 87 tons of plates, for Panama; Central Steel & Iron Co., Harrisburg, Pa., low for plates; United States Steel Products Co., New York, low for shapes.
100 tons, postoffice, Stillwater, Okla.; W. S. Bellows, Oklahoma City, Okla., general contractor.
100 tons, sheet piling, cofferdam on Manasquan river, New Jersey, for Central of New Jersey railroad; Arthur McMillan, New York, awarded general contract.

Concrete Bars

Bids Continue to Be Taken By Many States for Roads And Bridges, But Considerable Work Will Be Deferred Until Spring—Awards Hold to Low Average

REINFORCING BAR PRICES, PAGE 41

New York—New inquiry for reinforcing steel is light, but includes about 300 tons for New Jersey state highways, closing Dec. 7, and a substantial tonnage for New York state highways and bridges closing Dec. 6. Billet steel prices have been shaded on several fairly good awards recently.

Boston—Some of the tonnages pending for bridges and highways will not be placed until spring. Prices of billet and rail steel bars are easy.

Pittsburgh—Rust Engineering Co., Pittsburgh, will buy 110 tons of bars for Washington county, Pennsylvania, bridge work. Another highway letting for the state goes in Dec. 2, requiring about 150 tons. Billet bars are obtainable at 1.60c, Pittsburgh, in many instances, but unsettled conditions persist in several outlying sections.

Cleveland—Highway Construction Co., Cleveland, is low for the general contract for the Brookpark village, Cuyahoga county, Ohio, bridge, requiring 1365 tons. This order may clarify the market for new billet steel bars here, usually quoted 1.50c, base, Cleveland; this grade being specified. Two fairly good awards were made in the week for other state bridges, and a substantial tonnage still is pending.

Chicago—Indiana opened bids during the week on 1500 tons of bars for road work, while new bids will be taken Nov. 30 on more than 2000 tons for Illinois. Since most of this tonnage is for paving work, the material will not be ordered out until spring. General contract for the Wilmette, Ill., waterworks, taking 450 tons, has been placed. Prices continue under pressure, some exceptionally low figures being quoted on recent inquiries.

Awards Compared

	Tons
Awards, week ended Nov. 26	**2,239**
Awards, week ended Nov. 19	**2,669**
Awards, week ended Nov. 12	**1,650**
Awards, this week, 1932	**2,543**
Av. weekly awards, 1931	**6,808**
Av. weekly awards, 1932	**4,100**
Av. weekly awards, Oct.	**5,397**
Awards, to date, 1931	**340,210**
Awards to date, 1932	**196,825**

Contracts Placed

235 tons, postoffice, Jackson, Miss., to Southern General Fireproof Co., Atlanta, Ga.; through Penker Construction Co., Cincinnati.
202 tons, bridge, Chinquapin run, Lockhaven road, Baltimore, to Concrete Steel Co., Baltimore; through J. L. Robinson Contracting Co.
200 tons, bridges, highway No. 8, Jasper county, Texas, to Beaumont Building & Supply Co., Beaumont, Tex.; through Mecon & Johnson, Houston, Tex., contractors.
200 tons, two hospital wards, Fort Mason, Calif., to Gunn, Carle & Co., San Francisco.
195 tons, mainly type D bar mats, highways, Armstrong and Allegheny counties, Pennsylvania, to Truscon Steel Co., Youngstown, O.; Hagedorn Contracting Co., contractor.
162 tons, state highway work in Ventura county, California, to unnamed interest.
150 tons, highway, Benton, Me., to Bancroft & Martin Rolling Mill Co., Portland, Me.; material to be furnished by state; Amos D. Bridges & Sons Inc., Hazardville, Conn., contractor.
150 tons, bridges and approaches, Boston & Maine railroad, Revere, Mass., to Joseph T. Ryerson & Son Co., Boston; through Coleman Bros. Inc.
128 tons, bridges, Caldwell-Guadalupe counties, Texas, F.A.P., E-79 to Sheffield Steel Corp., Kansas City, Mo.; Austin Bridge Co., Dallas, Tex., general contractor.
117 tons, Culver boulevard crossing, Los Angeles county, California, for state to unnamed interest.
100 tons, two state bridges, Colorado, to unnamed interest.
100 tons, highways, Archer and Wichita Falls, Tex., general contractor.
100 tons, state bridges, Harrison county, Texas, to Austin Bros., Dallas, Tex.
100 tons, state bridge, Lawrence county, Ohio, to Ben-Tom Supply Co., Columbus, O.
100 tons, bridges, Hamilton county, Texas, S.A.P., 975-C, to Austin Bros., Dallas; Austin Bridge Co., Dallas, general contractor.

Contracts Pending

1364 tons, state bridge, Brookpark village, Cuyahoga county, Ohio, Highway Construction Co., Cleveland, low for general contract.
625 tons, state hospital buildings, Kings Park, N. Y.; Seglin Construction Co., low.
450 tons, waterworks, Wilmette, Ill., Owen Engineering Co., Chicago, awarded general contract.

300 tons, highways, Childress and Knox counties, Texas; L. E. Witham & Co., Wichita Falls, Tex., general contractor.

285 tons, highway, route 36, section 3, Atlantic Highlands to Seabright, N. J.; bids Dec. 7, Trenton, N. J., state highway commission.

245 tons, postoffice, Lansing, Mich.; H. G. Christman-Lansing Co., Lansing, contractor.

182 tons, Owyhee irrigation project, Nyssa, Oreg.; material to be furnished by government.

164 tons, Bonner Ferry bridge over Kootenai river, Idaho, for state; bids Dec. 1.

110 tons, bridge work, Washington county, Pennsylvania; Rust Engineering Co., Pittsburgh, low for general contract.

100 tons, wharf deck, New Orleans, La., board of commissioners, Port of New Orleans; bids Nov. 25.

Bolt, Nut Orders Rise; Some 1933 Inquiry Out

Bolts, Nuts, Rivets Prices, Page 41

Pittsburgh—A few bolt and rivet buyers, including some railroads, have inquired for first quarter of 1933. Prices, however, have not been announced for that period, expectation being they will be named unchanged sometime this week. This means reaffirmation of 75 off list for bolts and 2.25c, Pittsburgh, on large rivets. Last week's rivet and bolt orders were slightly better than those two weeks ago.

Chicago—Bolt, nut and rivet specifications the past week showed a slight gain and business so far this month compares favorably with the October volume. Farm implement manufacturers are showing occasional signs of better activity although bolt and nut orders still are light. Railroads are making only small purchases and jobbers as well as most consumers are attempting to keep inventories low and are purchasing only for prompt needs.

Cleveland—Some inquiry has developed from the oil industry for tank bolts. Automotive builders and railroads, however, continue the largest consumers, and railroads are taking more rivets than any other industry, demand being well sustained. The volume of nut and bolt business this month to the middle of last week was 30 per cent larger than in the comparable period in October.

Mirrors of Motordom

(*Concluded from Page* 15)

ing 30,000 units for January. At present the schedule is 50,000 units by Jan. 1 and 60,000 in January, and it is understood that the tentative plan is for 60,000 units each in February and March.

Small steel purchases have been made in the past week by Hudson-Essex, Reo and Olds. Plymouth continues the outstanding producer at 1200 units, six days a week, and will probably hold closely to this rate.

Willys has officially announced it will start production about Dec. 15 of a line of fours and sixes cheaper than any cars now on the market. Preliminary designs called for extreme streamlining, with headlights integral with the front fender skirt.

Following the acquisition of the White Co., Cleveland, by Studebaker, it is announced that Studebaker will move to Cleveland in December the manufacturing, engineering and sales divisions of Pierce-Arrow trucks now at Buffalo. The present plan is to build at Cleveland, White trucks with chassis from 1 to 10 tons with 4 or 6-cylinder engines, heavy duty tractors, several of which can be equipped with trailers, and buses. The Pierce-Arrow line consists of heavy duty trucks from 2 to 10 tons.

General Motors plans to transfer its Brown-Lipe-Chapin gear division from Syracuse, N. Y., to Flint, Mich., about Dec. 15, for one thing to take advantage of lower taxation in Michigan . . . International Harvester Co., Chicago, has formally approved the half-ton truck Willys will make for it. Production starts Dec. 15.

Pipe

Mills Moving Little Material—New York Buying 2000 Tons for Stock; Washington, 2800 Tons

PIPE PRICES, PAGE 56

Pittsburgh—No upturn was evident last week in demand for tubular products. The month generally is conceded as the low point of the year. Movement of standard pipe through jobbers' hands is confined to miscelalneous lengths. Pipe mill operations in this district continue below 10 per cent. Orders for boiler tubing are placed occasionally by railroads, but individually do not amount to carloads.

Boston—With few exceptions, cast pipe buying is in small lots. A Maine water district is buying close to 225 tons. Municipal programs for next spring are uncertain. Prices are unchanged. Bids close Dec. 6 on several thousand feet of cold drawn seamless black tubing and standard welded pipe for delivery to the navy at Boston.

New York—Bids close Dec. 2 on close to 2000 tons of cast iron pipe, fittings and valve boxes for New York, the first direct purchase for yard stocks in more than a year. State hospital and highway work furnishes some small-lot inquiry. Brooklyn Union Gas Co. is reported inquiring for about 1500 tons of steel pipe for delivery next year.

Chicago—Cast pipe orders and inquiries are limited principally to a few small lots. Prospective work is accumulating, on which action is not expected for several months.

Steel Pipe Pending

1500 tons, estimated, Brooklyn Union Gas Co., Brooklyn, N. Y.

300 tons, steel or wrought iron, for heating systems, state hospitals, Orangeburg, Oneonta and Kings Parks, N. Y.

100 tons, galvanized steel or wrought iron, 3-inch and under, Panama, Mohawk Tube Co., Cohoes, N. Y., low; L. R. Flori Co., St. Louis, low on 3100 feet of extra strong wrought iron or steel, 4-inch and under.

Steel Pipe Placed

500 tons, 4½-inch, Baltimore Gas, Electric & Power Co., Baltimore, to Bethlehem Steel Co., Bethlehem, Pa.

Cast Pipe Pending

2850 tons, 48-inch for Washington; M. Cain Co. Inc., low. Following low on alternates: Concrete pipe, Lock Joint Pipe Co., Ampere, N. J.; wrought iron, Ligon & Ligon, Baltimore; steel, Peter and A. J. Ellis Inc., $10.50 per linear foot.

2000 tons, 6 to 12-inch, with fittings and miscellaneous castings, department of purchases, New York; bids Dec. 2.

930 tons, waterworks, Denville, N. J. R. F. C. loan for $80,000 authorized.

319 tons, 6 to 10-inch class 150 to 250, Burbank, Calif.; American Cast Iron Pipe Co., Birmingham, Ala., low.

225 tons, Kennebec water district, Kennebec, Me.; bids in.

Unstated tonnage, $25,000 worth of cast iron pipe, and steel for storage tank, Kenton county, Kentucky, waterworks; R. F. C. loan for $25,000 authorized.

Cast Pipe Placed

200 tons, 6 and 8-inch, Latham's Corner, N. Y., to Warren Foundry & Pipe Co., Wharton, N. J.

168 tons, 6-inch, class 150, water line, naval ammunition depot, Oahu, T. H., to W. P. Thurston Co. Inc., Richmond, Va.

133 tons, 12-inch class 150, Haywards, Calif., to unnamed interest.

100 tons, small sizes, Essex Falls, N. J., to R. D. Wood & Co., Florence, N. J.

Strip

First Quarter Prices Named at Present Level—Production Resists Downward Pull

STRIP PRICES, PAGE 41

Pittsburgh — Strip prices have been announced for first quarter. Present bases of 1.45c and 2.00c, Pittsburgh, on hot and cold-rolled, respectively, will apply unchanged. There was less miscellaneous and a shade more automotive ordering of strip steel last week. Mill operations consequently have gained to 15 per cent, mainly in output of narrow hot-rolled sizes. A producer in this district placed two mills in operation Nov. 23.

New York — Strip demand, particularly cold-rolled buying, has slowed up. Demand for various electrical devices for the holiday trade has been pretty well filled and textile industry more or less satisfied, thus affecting cold strip. Hot-rolled material continues to move slowly. Prices are unchanged.

Philadelphia—Steel strip is quiet in this market, with current prices reaffirmed for next quarter.

Chicago — Some inquiry for first quarter strip requirements is appearing and producers are quoting the present market of 1.55c, Chicago, on hot strip for that period. Cold-rolled strip continues 2.00c, Pittsburgh-Cleveland. Specifications are steady and have resisted a downward trend over the past several weeks. Automotive business is providing fair support to demand. Operations of hot mills continue around 15 per cent.

Cleveland—Partsmakers for Chevrolet and Plymouth continue to place moderate orders for strip, and specifications on automotive business closed earlier this month are fairly well sustained, with volume far in excess of that of October. Other lines have been dull since the election. The approach of inventory season is exerting an influence, some consumers evidently seeking to obliterate stocks. Hot-rolled strip is steady at 1.45c to 1.50c, base, Pittsburgh; and cold-rolled generally 2.00c for the usual run of small orders.

Steel Operating Rate Bows to Holiday, Falls to 17.5

Pittsburgh—A further decline last week of two points in the district's ingot operating rate to 16 per cent is attributable to several shutdowns over the midweek holiday. This week the rate should recoup its loss, back to 18 per cent. One independent mill is running two open hearths at a continued rate, its best showing in several months, while the Butler, Pa., mill is reported to have resumed Nov. 14. Sheet output is around 15 per cent here, pipe is low at under 10 and strip operations about 15. Eight of 53 steelworks blast furnaces are blowing, one Monessen, Pa., having been blown out Nov. 25. Four of the eight are Corporation stacks.

Youngstown, O. — Finishing mill operations improved slightly last week, but steelmaking held at 16 per cent. One blast furnace has resumed. It is expected that the current week's steel rate also will be 16.

Operations, week ended Nov. 26	**17.5**
Operations, week ended Nov. 19	**19**
Operations, week ended Nov. 12	**21**
Operations, one year ago	**29.5**
High for 1932, Feb. 6	**28.5**
Low for 1932, July 9	**12**

Philadelphia—Eastern operations are slightly easier at 13 per cent. Little change is in immediate prospect.

Buffalo—Steelworks operations expanded two points last week to 27 per cent, the holiday notwithstanding, and probably will hold this week. Bethlehem added a seventh active open hearth at Lackawanna, making ten furnaces active. With the approaching close of navigation on the Great Lakes, operations may ease.

Cleveland—Steel ingot production here for the week ended Nov. 26 was at 35 per cent, down 3 points from the preceding week. Otis Steel Co. operated five open hearths, and Corrigan, McKinney Steel Co. four. The reduction resulted from American Steel & Wire Co. dropping one unit, to three. Production was not interrupted Thanksgiving day. Schedules call for a 35 per cent rate the current week.

Chicago—Ingot production declined the past week to 15 per cent, off two points, as a result of a temporary suspension of open hearth operations at one plant. A higher rate is anticipated this week. Blast furnace operations are unchanged at eight active stacks of 36.

Birmingham, Ala.—Despite the holiday, steelmaking operations here expanded from 12½ per cent to 17½ per cent last week, three open-hearth furnaces of Tennessee Coal, Iron & Railroad Co. being lighted. This week the rate may ease off.

Warehouse Prices Hold; Sales Change Little

Warehouse Prices, Page 56

New York—A leading warehouse distributor notes a slight improvement, especially in commercial steel bars to the industrial and miscellaneous trade, but November volume was little heavier than the previous month. Prices on sheets appear steadier on small lots. Tonnage orders are still lacking.

Philadelphia—Jobbers have advanced boiler tubes, quoting the equivalent of the new mill schedule on less than 10,000 pounds, plus less-carload freight rate. Demand for products from store is steady.

Pittsburgh—Terne plate out of stock has been reduced 30 cents to $1 per box. On 8-pound ternes the reduction has been 30 cents per box; 50 cents on 15-pound; 80 cents on 20, 25 and 30-pound; and $1 on 40-pound. Small spikes are easier, now being quoted at 2.65c from stock. Some jobbers report demand unchanged, while others have met a spotty condition with a downward trend noticeable.

Detroit—Except for the usual slackening of demand over the Thanksgiving holiday there is little change in the warehouse situation. Some tool and die shops have received work on automobile models to be presented during the Chicago Fair.

Cincinnati—Buying of warehouse steel showed no curtailment on account of the Thanksgiving holiday. Tonnage for the month will be close to the October level. Quotations are unchanged.

Chicago—Sales are declining slowly, but are off no more than had been expected. Occasional orders for rush delivery are supplanting purchases ordinarily made from mills and help to maintain total business. Prices are unchanged.

St. Louis—November business of iron and steel warehouses to date has been below that of the preceding month. Building materials of all descriptions are moving slowly, and the same is true of all items consumed chiefly in the country. Prices are steady.

RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Asterisk denotes price change this week

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$15.50
Pittsburgh, dist. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.00
Philadelphia, delivered	13.51 to 13.76
Virginia furnace	17.25
Granite City, Ill., fur.	16.50 to 17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	18.91 to 19.91
Buff., all-rail, Brooklyn	18.90
Buff., all-rail, Newark	17.28
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	15.75 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.40
Buffalo, all-rail, Newark	17.78
Buff., all-rail, Boston	19.91 to 20.91
Virginia furnace	17.75
*Eastern, del. Phila.	13.76 to 14.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
*Eastern, del. Phila.	14.26 to 14.76

MALLEABLE

Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.00
Pittsburgh dis. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Chicago, furnace	15.50
Buffalo fur., local del.	16.50
Eastern Penna, delivered	14.63 to 18.91
Granite City, Ill., fur.	16.50 to 17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	14.00
Pittsburgh, delivered	14.63 to 15.13
Eastern Penn., del.	13.50
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	14.00

BESSEMER

Valley furnace	14.50 to 15.00
Pittsburgh, furnace	15.00
Pittsburgh, delivered	15.63 to 16.13

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	14.00
Pittsburgh district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19; 15—$21 to $23.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

BEEHIVE OVENS

Connellsville furnace	$1.75 to 2.00
Connellsville foundry	2.50 to 4.25
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.21 to 8.81
Chicago, ovens, outside del.	7.00
Chicago, del.	7.75
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.00
Indianapolis, del.	7.75
Ashland, Ky., ovens, Connell., basis	4.50
Portsmouth, O., ovens Connell., basis	4.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania New Jersey furnaces

(Nominal)

Foundry and basic, 56-63%, contract	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

(Nominal)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50 to 9.00
North African low phos.	7.50 to 8.50
Swedish basic, 65%	7.50 to 8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.00
Newfoundland fdy., 55%	8.00
Tungsten, spot, short ton unit, duty paid	$10.00 to 10.25
Chrome ore, 48% gross ton c.i.f.	$17.00 to 18.00

Manganese Ore

(Nominal)

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55%	24 cents
South African, 52%	22 to 23 cents
South African, 49-51%	21 to 22 cents
South African, 44-47%	20 to 21 cents
Indian, 48-50%	22 cents
Brazilian, 46-48%	18 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$35.00
Missouri	25.00 to 35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	$35.00
Joliet and East Chicago	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

Burned, 9 x 4½ x 2½	$61.50
Unburned, 9 x 4½ x 2½	52.00

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$26.00
Pittsburgh, bessemer	26.00
Youngstown	26.00
Cleveland	26.00
Philadelphia	31.75
Chicago	26.00
Forging, Chicago	31.00
Forging, Pittsburgh	31.00
Forging, Philadelphia	35.75

SHEET BARS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00
Chicago	28.00

SLABS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	38.00

SKELP

All grades, Pittsburgh	1.50c to 1.60c

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82%, tidewater, duty paid	$68.00
Ferromanganese, del. Pittsburgh	73.24
Spiegeleisen, 19-20%, domestic fur. spot†	24.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(The above for spot carlots. Contract price $5 a ton less).	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic per ton carload, 23-26% f.o.b. Anniston, Ala.; 24%, $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60 per cent, per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molybdate, lb. cont.	0.80

†Carloads. Differentials apply to quant.

Fluorspar

85 and 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton car loads	$12.00
Washed gravel, import duty paid tide, gross ton	18.50

Pig Iron

Two Stacks Down—Sales Are Slower—Shipments Fairly Well Sustained in Lake Areas

PIG IRON PRICES, PAGE 48

Pittsburgh—Truckload sales of pig iron are more frequent than carloads. Total demand in November probably will be the lowest of the year, except that in July. A few radiator plants are the only specifiers for foundry iron. Follansbee Bros. Co. Inc. will not melt iron at its Follansbee, W. Va., plant which resumed last week. Instead, it is probable the company will buy semifinished steel for its sheet and tin mills, which resumed. Prices continue nominal at $15, Pittsburgh district furnace, for foundry, bessemer and malleable; and $14 for basic.

Boston—Pig iron sales are down, and shipments are in small lots. A wide range of prices prevails in New England. Dutch iron is $14 to $15, delivered, to some points in southern New England while Indian iron has sold at $14.50, dock. The Everett, Mass., furnace is holding to its minimum, $16 furnace. Some Buffalo iron has been sold on a basis of close to $14 furnace.

New York—Inquiry for 350 tons of foundry iron for the Schenectady, N. Y., plant of the American Locomotive Co. dominates a listless market. Buffalo foundry iron is holding at $14, furnace, for delivery here.

Philadelphia—While $12.75 to $13, base, eastern Pennsylvania furnace, appears fairly steady for foundry iron, silicon differentials continue to be waived in many instances. Foreign competition is held largely responsible for this weakness. Baltimore & Ohio railroad is inquiring for a small amount of No. IX iron. New York Central is inquiring for a carload each of silvery, charcoal and No. 2 foundry for Elkhart, Ind.

Buffalo—A belated cargo of pig iron moved to the East by barge canal during the week, closing the movement for the season. The Hanna Furnace Corp. has suspended production at the former Rogers-Brown works, and is not expected to resume this year. This leaves only two stacks in production in the Buffalo district.

St. Louis—Slowing of work at stove plants has reduced demand for pig iron. New orders are restricted to a few carloads.

Cleveland—Some inquiries have appeared for pig iron for delivery as required over the remainder of this year and the first quarter, and present prices are being quoted. Demand from automobile builders is larger than that from any other group of consumers, but the shipments are on orders placed some months ago. They are not as brisk as anticipated. In general, shipments show a slowing tendency, and new sales during the week were lower than in any period since midsummer, at approximately 2000 tons. The base price remains $15, Cleveland furnace, for local delivery, and $14 to $14.50 for outside shipment.

Cincinnati—Consumption has been reduced considerably as seasonal work on heating equipment has been completed by some foundries. Sales dropped during the week.

Chicago—Pig iron shipments are well maintained, the movement so far this month comparing favorably with activity a month ago. New buying lacks improvement, although a fair number of orders are being received for first quarter. Automotive requirements are helping to sustain recent shipments. The farm implement industry is preparing for slightly better operations. Prices are steady at $15.50, furnace, for No. 2 foundry and malleable.

Birmingham, Ala.—Production has been reduced by the banking of the Tennessee Coal, Iron & Railroad Co.'s largest furnace at Fairfield, Ala. Buying appears at a low point.

Toronto, Ont.—The market is unchanged in demand and prices. Melters order only small lots as required.

Ferroalloy Prices Steady

Ferroalloy Prices, Page 48

Sellers of ferromanganese and spiegeleisen have not as yet opened books for next year. Meanwhile, car lots of ferromanganese are holding at $68, duty paid. Domestic spiegeleisen is $24, furnace, car lots for spot shipment.

F. W. Marshall & Co., New York, have booked 20,000 pounds of ferrosilicon for the Panama canal commission.

Coke

Foundry Requirements Diminish—Domestic Grades More Active—Beehive Fuel Prices Easy

COKE PRICES, PAGE 48

Pittsburgh—Both beehive foundry and furnace coke are in slow demand, shipments last week being less than in the week before. Price discrepancies are apparent, with common grades of beehive foundry obtainable at around $2.50, and sales of furnace grades below $1.75. Shipment of by-product coke from Neville Island into Monessen, Pa., has terminated, the blast furnace at Monessen having been blown out late last week.

New York—Seasonal contracting in metallurgical coke is getting under way slowly. Prices are unchanged, beehive furnace holding at $1.50 to $2, and $2 to $2.15, Connellsville, for heating and smelting grades, respectively. Beehive foundry coke is $2.75 to $4.25, western Pennsylvania ovens, depending upon grades. By-product foundry coke is $8.21 to $8.81, delivered Newark, N. J.; $10, New England; and $8.50, Philadelphia.

Merrit Supply Co., New York, is low for 100 tons of foundry coke for Panama at $1888, delivered.

Detroit—Domestic coke prices have been advanced 25 cents to $4.25, f.o.b. Detroit, for egg and nut and $4 for pea. Delivered Detroit prices are 50 cents above these levels. Foundry coke continues $8, ovens.

Cincinnati — Only slow progress has been made thus far on contracts for by-product foundry coke for the first half. Specifications are holding up well.

Chicago—By-product coke shipments continue around the rate of the past several weeks. Foundry operations are spotty and coke consumption is light, showing little change over recent weeks. Domestic heating coke requirements have been aided by recent cold weather.

St. Louis—Deliveries to foundries during the last half of November are considerably lighter than in the first half. Domestic fuel requirements have been stimulated by cold weather.

Birmingham, Ala.—Shipments of by-product foundry coke to other districts are proceeding at a good rate, but consumption here is lagging. By-product foundry coke holds at $4, base, Birmingham.

Scrap + Baling = $$$

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HYDRAULIC STRAIGHTENERS

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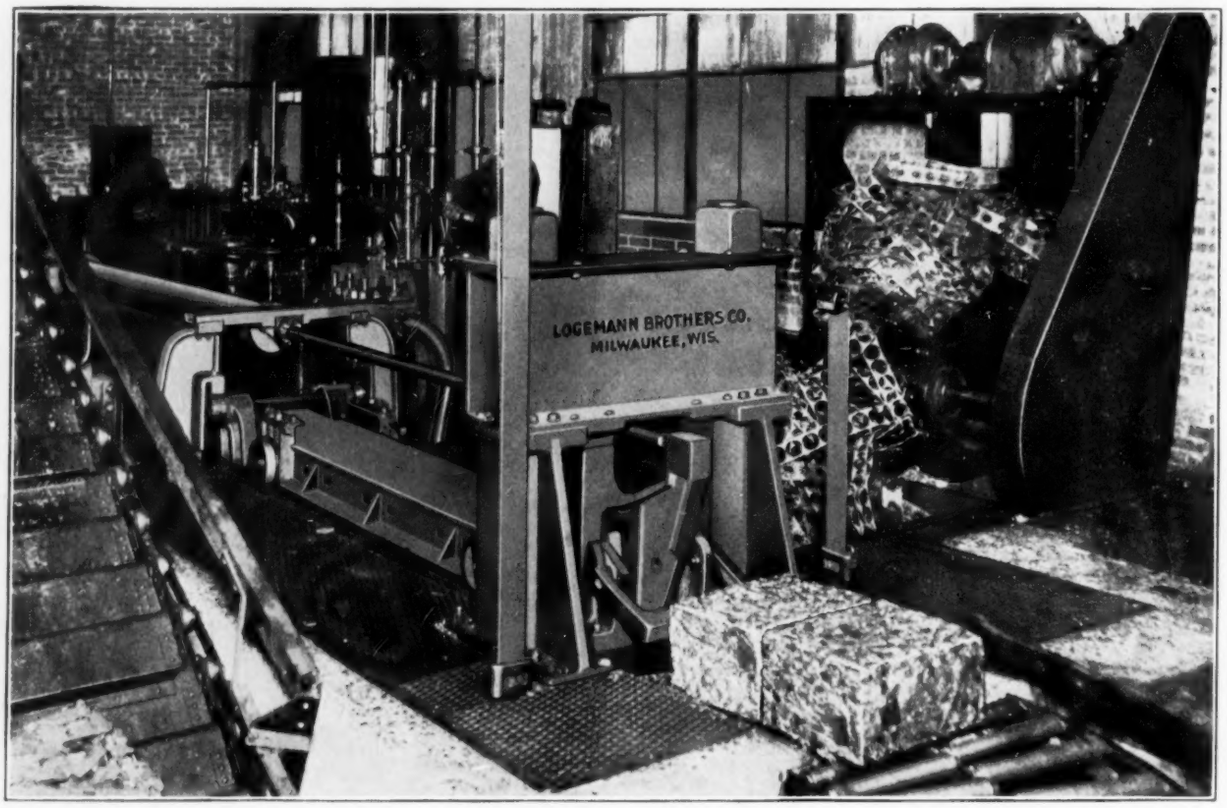
Hydraulically-compressed scrap commands at all times the best price - - can be more economically handled - - can be readily held for favorable markets.

Baling practically eliminates corrosion - - saves much heat in remelting - - permits easy loading of scrap cars to capacity.

The installation below is in a plant making automotive electrical equipment. Scrap comes to the baling room over the horizontal conveyor at the right, is caught by the hopper, while press is finishing a bundle, then automatically charged into press. Press cover shoves the finished bundles to the rollers carrying them to the inclined apron-conveyor at the left, this discharges directly into gondola-car outside.

Our Engineering Department, with years of experience on installations of all kinds, is at the service of interested scrap-producers. Write us.



LOGEMANN BROTHERS COMPANY

3126 W. BURLEIGH STREET MILWAUKEE, WISCONSIN

BRANCH OFFICES IN ALL PRINCIPAL CITIES

Scrap

Weakness Gains as Melters Remain Out of Market—Prices Make Fractional Declines

Chicago—Iron and steel scrap prices are weak and activity has declined to a low level, with suspension of shipments to one important consumer and lack of orders at other points. The absence of new buying leaves prices unchanged, but quotations are nominal and some weakness has developed in prices offered by dealers in covering the few outstanding orders. Heavy melting steel remains $5.50 to $6. Boat shipments of heavy melting steel to eastern points will be suspended for the season with movement of the third cargo. Cast grades remain fairly active for the leading steelmaking consumer in the district.

Boston—Heavy cast scrap is easier. Buying and shipments on all grades are light, although an occasional

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.00 to 7.50
Boston, dealers	3.25 to 3.75
Buffalo, No. 1	7.50 to 8.00
Buffalo, No. 2	6.25 to 6.75
Chicago	5.50 to 6.00
Cleve., No. 1	7.00 to 7.50
Cleve., No. 2	6.00 to 6.50
Det., No. 1 deal.	5.00 to 5.50
Det., No. 2 deal.	3.00 to 3.50
E. Pa. del. mill	7.00 to 7.50
E. Pa., No. 2 del.	5.50 to 6.00
N. Y. deal. R. R.	4.50 to 4.75
N. Y. deal. No. 2	3.00
N. Y. deal. yd.	2.50 to 3.00
Pitts. No. 1	8.75 to 9.25
St. L. No. 1 sel.	6.00 to 6.50
Federal, Ill.	5.50 to 6.00
Granite City, Ill.	5.00 to 5.50
Valleys, No. 1	9.00 to 9.50

COMPRESSED SHEETS

Buffalo, dealers	6.25 to 6.75
Chi. (Factory)	4.50 to 5.00
Cleveland	6.50 to 7.00
Detroit, dealers	4.75 to 5.25
E. Pa. new mat.	5.00 to 5.50
Pittsburgh	8.75 to 9.25
Valleys	8.50 to 9.00

BUNDLED SHEETS

Buffalo	4.25 to 4.75
Cinci., del.	4.25 to 4.75
Cleveland	4.50 to 5.00
Eastern, Pa.	5.00
Pittsburgh	7.75 to 8.25
St. Louis	1.50 to 2.00

SHEET CLIPPINGS LOOSE

Chicago	2.00 to 2.50
Cincinnati	2.00 to 2.50
Detroit, dealers	1.50 to 2.00
St. Louis	1.50 to 2.00

STEEL RAILS SHORT

Birmingham	7.50 to 8.50
Boston, dealers	2.75 to 3.00
Buffalo	9.50 to 10.00
Chicago (3 ft.)	7.50 to 8.00
Chicago (2 ft.)	8.00 to 8.50
Cinci., del.	9.00 to 9.50
Detroit, deal.	8.00 to 8.50
Pitts. (open-hearth, 3 ft. and less)	10.50 to 11.00
St. Louis	7.50 to 8.00

STOVE PLATE

Birmingham	5.75 to 6.25
Boston, dealers	2.50 to 3.00
Buffalo	7.75 to 8.00
Chicago, net	5.75 to 6.25
Cinci., deal. net	3.50 to 4.00
Det., net deal.	3.00 to 3.50
Eastern Pa.	6.00 to 6.50
N. Y., deal. mill	2.50 to 3.00
St. Louis	5.50 to 6.00

COUPLERS, SPRINGS

Buffalo	9.00 to 9.50
Chicago	6.50 to 7.00
Eastern Pa.	9.00 to 9.50
Pittsburgh	9.75 to 10.25
St. Louis	6.00 to 6.50

ANGLE BARS—STEEL

Chicago	7.00 to 7.50
St. Louis	6.00 to 6.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	9.00 to 9.50
Cleveland bil. and bloom crops	10.00 to 11.00
Eastern Pa.	9.00 to 9.50
Pittsburgh billet bloom crops	10.75 to 11.25
Pitts., sheet bar crops	10.75 to 11.25

FROGS, SWITCHES

Chicago	6.00 to 6.50
St. Louis	6.00 to 6.50

SHOVELING STEEL

Chicago	5.50 to 6.00
Cleveland	5.75 to 6.00
St. Louis	5.00 to 5.50

RAILROAD WROUGHT

Birmingham	4.50 to 5.50
Boston, dealers	1.00 to 1.50
Buffalo, No. 1	4.50 to 5.00
Buffalo, No. 2	7.00 to 7.50
Cinci., No. 2	5.50 to 6.00
Chi., No. 1, net	5.00 to 5.50
Chicago, No. 2	5.50 to 6.00
Eastern Pa.	7.00 to 7.50
N. Y., No. 1, deal.	2.50 to 3.00
Pitts., No. 2	8.75 to 9.25
St. Louis, No. 1	3.50 to 4.00
St. Louis, No. 2	5.00 to 5.50

SPECIFICATION PIPE

Boston	3.00 to 4.00
Eastern Pa.	7.00 to 7.50
N. Y., deal	2.00 to 2.25

BUSHELING

Buffalo, No. 1	6.25 to 6.75
Chicago, No. 1	4.00 to 4.50
Cinn., No. 1 dl.	4.00 to 4.50
Cinn., No. 2	2.50 to 3.00
Cleve., No. 2	3.00 to 3.50
Det., No. 1 new deal.	3.75 to 4.25
St. L., No. 1	3.00 to 3.50
Val. new No. 1	8.25 to 9.75

MACHINE TURNINGS

Birmingham	3.00 to 3.50
Boston, dealers	0.75 to 1.00
Buffalo	3.75 to 4.25
Chicago	3.00 to 3.50
Cin., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit	2.00 to 2.50
Eastern Pa.	3.50 to 4.00
N. Y., deal	1.35 to 1.50
Pittsburgh	6.25 to 6.75
St. Louis	1.50 to 2.00
Valleys	6.75 to 7.25

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	.75 to .90
Buffalo	3.75 to 4.25
Cinn., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal.	2.50 to 3.00
Eastern Pa.	3.50 to 3.75
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.50 to 7.00

CAST IRON BORINGS

Birming., chem.	12.00 to 13.00
Birming., plain	3.00 to 3.50
Boston, chem.	5.50 to 6.00
Boston, dealers	1.00 to 1.25
Buffalo	4.25 to 4.50
Chicago	4.00 to 4.50
Cinn., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal.	2.50 to 3.00
Eastern Pa.	3.50 to 3.75
E. Pa., chem.	8.00 to 10.50
N. Y., deal.	1.00 to 1.50
Pittsburgh	6.50 to 7.00
St. Louis	2.75 to 3.25

PIPE AND FLUES

Cinn., deal.	3.25 to 3.50

RAILROAD GRATE BARS

Buffalo	4.00 to 4.50
Chicago, net	5.00 to 5.50
Cincinnati	4.00 to 4.50
Eastern Pa.	5.50 to 6.00
N. Y., deal.	3.50 to 4.00
St. Louis	4.50 to 5.00

FORGE FLASHINGS

Boston, dealers	2.00 to 2.50
Buffalo	5.50 to 6.00
Cleve. ov. 10 in.	6.00 to 6.50
Detroit	3.50 to 4.00

FORGE SCRAP

Boston, dealers	1.75 to 2.00
Chicago	6.50 to 7.00
Eastern Pa., del.	5.00 to 5.50

ARCH BARS, TRANSOMS

Chicago, net	5.00 to 5.50
St. Louis	5.00 to 5.50

AXLE TURNINGS

Boston, deal.	2.50 to 3.00
Buffalo	6.50 to 7.00
Chi., elec. fce.	4.50 to 5.00
Cleveland	5.50 to 6.00
Eastern Pa., del.	7.00
Pittsburgh, O. H.	7.50 to 8.00
St. Louis	3.50 to 4.00

STEEL CAR AXLES

Birmingham	9.00 to 9.50
Boston, ship. pt.	6.00 to 6.50
Buffalo	10.00 to 10.50
Chicago, net	8.50 to 9.00
Eastern Pa.	14.50
St. Louis	9.00 to 9.50

SHAFTING

Boston, ship. pt.	7.00 to 7.50
N. Y., deal.	6.50 to 7.00
St. Louis	7.50 to 8.00
E. Penna.	11.00 to 12.00

CAR WHEELS

Birming., iron	7.00 to 7.50
Boston, iron deal.	3.50 to 4.00
Buffalo, iron	7.00 to 8.00
Buffalo, steel	8.50 to 9.00
Chicago, iron	7.00 to 7.50
Chi., rolled steel	7.00 to 7.50
Cincinnati iron	6.25 to 6.75
E. Pa. steel	9.00 to 10.00
E. Pa. iron	9.00 to 9.50
Pitts., iron	9.00 to 9.50
Pitts., steel	9.50 to 10.00
St. Louis, iron	5.00 to 5.50
St. Louis, steel	7.00 to 7.50

NO. 1 CAST SCRAP

Birmingham	6.50 to 7.00
Buffalo (Mach.)	10.00 to 10.25
Buffalo, cupola	9.00 to 9.50
Boston, textile	6.75 to 7.00
Boston No. 2	3.00 to 3.50
Chi., mach. net	6.00 to 6.50
Chi., railroad, net	5.50 to 6.00
Chicago, agri., net	5.50 to 6.00
Cinn., mach. cup.	7.00 to 7.50
Cleve. cupola	7.00 to 8.00
Det., net deal.	6.50 to 7.00
E. Pa. cupola	9.00 to 9.50
N. Y., cup. deal.	5.50 to 6.50
N. Y., del. local foundries	8.00 to 8.50
Pitts., cupola	9.00 to 9.50
San Fran., del.	13.50 to 14.00
Seattle	4.50 to 6.50
St. L., No. 1 ma.	6.50 to 7.00
St. L., No. 1	6.00 to 6.50

HEAVY CAST

Boston, del.	3.50 to 4.50
Bost., mach. cast	7.00 to 7.50
Buffalo, break	6.50 to 7.00
Cleve., break	5.50 to 6.00
Detroit, auto, net deal.	7.00 to 7.50
Det., break., dl.	4.00 to 4.50
Eastern Pa.	8.75 to 9.00
N. Y. No. 1, dl.	5.00 to 5.50
N. Y. break, dl.	4.75 to 5.25
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston, consum.	8.00 to 8.50
Buffalo	8.00 to 8.50
Chicago, agri.	5.00 to 5.50
Chicago, R. R.	6.00 to 6.50
Cinci., R. R., del.	7.00 to 7.50
Cinci., agri. del.	6.50 to 7.00
Cleveland, rail	7.50 to 8.00
Det. auto deal.	5.00 to 5.50
St. Louis, rail	4.50 to 5.00

RAILS FOR ROLLING

5 feet and over

Birmingham	7.50 to 7.75
Boston, deal.	5.00 to 5.50
Buffalo	7.00 to 7.50
Chicago	8.25 to 8.75
Eastern Pa.	9.50
New York dealer	4.25 to 4.75
St. Louis	7.00 to 7.50

LOCOMOTIVE TIRES

Chicago, cut	7.00 to 7.50
St. L., No. 1	5.00 to 5.50

LOW PHOS. PUNCHINGS

Chicago	7.50 to 8.00
Buffalo	9.00 to 9.50
Eastern Pa.	9.50 to 10.00
Pittsburgh	10.75 to 11.25

barge goes to eastern Pennsylvania. For Worcester, No. 1 steel is $5 minimum, delivered, and No. 2 is $4. Chemical borings are firmer, but the supply is light. Reduction in scrap rates from Providence, R. I., to Kenilworth, N. J., from $4.60 a net ton to $4.41 on minimum shipments of 44,800 pounds is announced.

New York—For shipment to Italy, 5000 tons of No. 2 steel has been sold, $3 being paid at barge. Loading of this grade for Poland continues at the same price, while $4.50, barge, for No. 1 melting steel is paid for shipment to Japan. Domestic shipments are light at unchanged prices. Some No. 1 steel is going to Coatesville, Pa., at $7.00, delivered. Buying is light and shipments against contracts are also small.

Philadelphia—Prices of steel and iron scrap are easy but nominally unchanged. A consumer at Coatesville, Pa., has bought 800 tons of heavy breakable cast at $8.50 delivered.

Buffalo—There is no active interest in scrap, although reports persist that a large consumer may purchase a tonnage of heavy melting steel at any time. Prices are nominally a trifle weaker. The largest local consumer of stove plate is reported to have discontinued operations for one week.

Pittsburgh—Steel and iron scrap trading is slack and sales to melters are absent. Prospects of buying by leading mills is remote. A sale of 15 carloads of rail crops for Grove City, Pa., delivery last week was at $11. Heavy melting steel is unchanged at $8.75 to $9. Pittsburgh takes bids Nov. 29 on 3400 tons of cast iron in junked machinery of the Brilliant pumping station in Pittsburgh.

Detroit — Blast furnace grades have been reduced in this market, due principally to the fact that the lake movement to Buffalo has ceased. Heavy melting steel remains unchanged at $5 to $5.50. Borings and mixed borings and turnings are off 50c cents to $2.50 to $3. No. 1 new busheling is off 50 cents; old No. 2 busheling, $1; machine shop turnings, 50 cents; and short shoveling turnings, 75 cents.

Cleveland—While shipments of even miscellaneous grades of iron and steel scrap have been unusually light in the past week locally, intimations are given of revival in heavier grades within a fortnight. Cleveland mills are taking a minimum of heavy steel and pressed sheets although open-hearth operations continue unchanged. Valley markets are quiet.

Cincinnati—Buying is absent from the iron and steel scrap market, although considerable material is being moved to some important consumers on contracts. Quotations are unchanged, due in part to lean supplies and little or no distress material.

Birmingham, Ala.—Steel and iron scrap is dull, small lots moving to local consumers and prices are low and still weak. No. 1 cast is in best demand.

Toronto, Ont.—Demand for iron and steel scrap has again tapered, with consumers showing a preference for a few special grades. Steel scrap has fallen into a state of stagnation in the local market, but Montreal dealers report small tonnage demand. Machinery cast continues to move at a steady pace on spot delivery account, but large tonnage awards are lacking. Other iron grades have variable call for spot needs. Prices are unchanged.

St. Louis—Generally quiet demand, coupled with the Thanksgiving holiday, has resulted in the smallest scrap iron and steel business for a number of months.

There has been a slight recession in activities at stove and heating apparatus foundries, and malleable plants report poor specifications and no new business from the automotive industry.

Ore Movement Closes

Iron Ore Prices, Page 48

Cleveland—Only one cargo of iron ore remained to be shipped from the Lake Superior district near the close of last week. It was due at lower lake ports early this week. Though the final report has not yet been issued by the Lake Superior Iron Ore association, the season's lake movement apparently will be close to 3,575,000 tons.

Stabilizes Semifinished

Semifinished Prices, Page 48

Announcement of unchanged strip and sheet prices for the first quarter tends to discard discussion of an advance in billets and sheet bars. In all likelihood $26, Pittsburgh, Youngstown, O., and Cleveland, will continue the market for contracting in December. A sheet and tin mill in the Pittsburgh district resumed Nov. 22 after being closed since June. With about a month's supply of semifinished steel on hand, it probably will purchase sheet bars soon.

Profits in Steel Industry; Postwar Comparisons

(*Concluded from Page* 13)

In each sub-division of industry, the ratio of gross income to total invested capital was computed for the corporations so reporting. This ratio was then applied to the aggregate of total invested capital for all corporations in the industry, in order to arrive at an estimated total amount for gross income. Therefor, while the ratios developed on gross income are but estimates, they are probably reasonably representative of the actual figures for the industry. Three small sub-divisions of industry were eliminated in constructing the table because no corporations in those groups reported gross income. The remaining 50 sub-divisions of industry have been classified on the basis of the ratio of earnings, before deducting interest on funded debt, to total invested capital.

This table brings out the fact strongly that even in the period from 1927 to 1930, when the rate of steel production was relatively higher than that for all manufactures, the profits of the steel industry were lower than the average for all industry. The weighted average surplus net profits to net worth, for all industries in this period, amounted to 9.45 per cent, which is 1.43 times as much as the corresponding average for the steel industry, of 6.62 per cent. Also, industries representing nearly three-fourths of the total assets of nearly 33 billion dollars, all showed higher figures for this ratio than steel, with an average of 10.80 per cent, which is 1.63 times that for the steel industry.

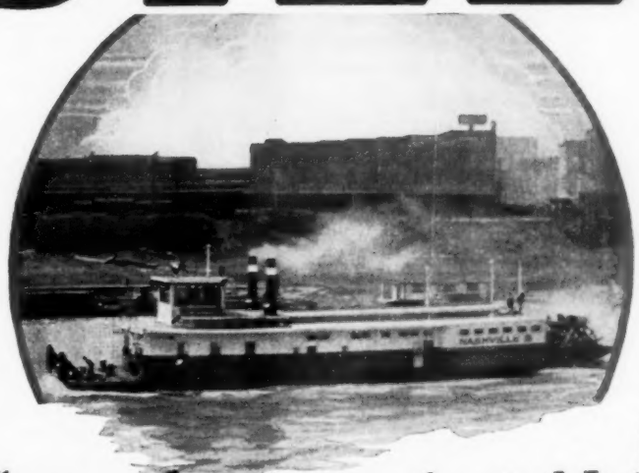
Although the steel industry has a materially lower rate of surplus net profits to net worth, it writes off only about half as much for depreciation and depletion, when related to net plant and equipment, as do the average of all of these industry groups. This ratio for steel is 3.58 per cent, while it is 6.65 per cent for the weighted average of all groups.

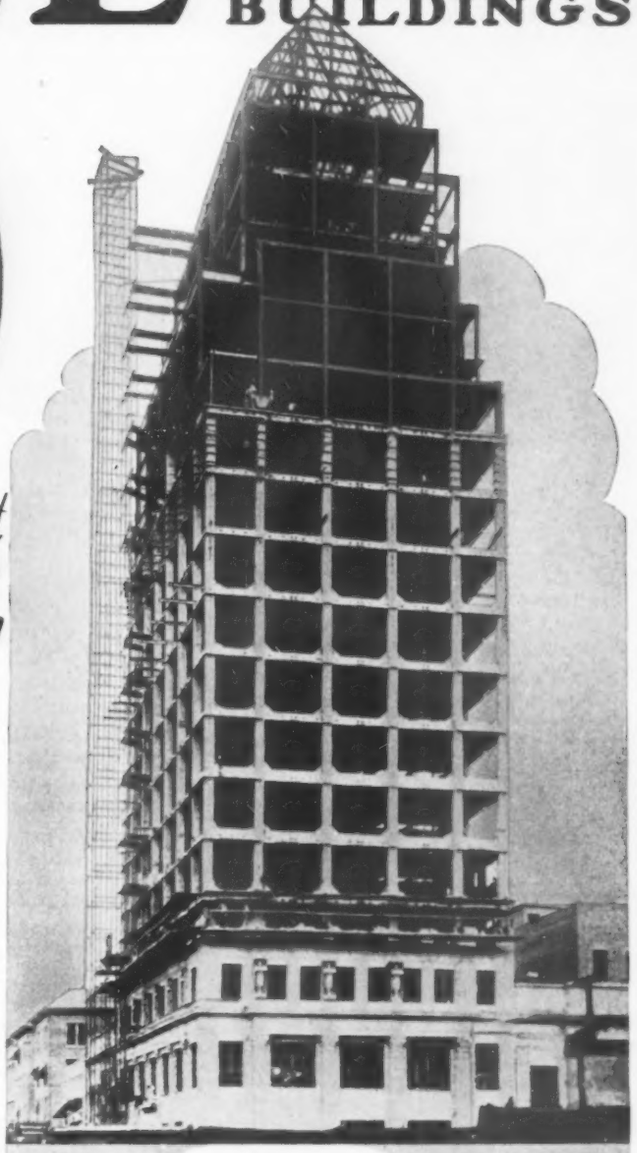
(*To Be Concluded*)

Schedules Oil Burner Show

American Oil Burner association, 342 Madison avenue, New York, will hold its tenth annual oil burner show at Hotel Stevens, Chicago, June 12-16, 1933, shortly after opening of the Century of Progress exposition.

STEEL FOR BOATS BRIDGES OR BUILDINGS





Wherever there is a use for steel-Let TENNESSEE

figure on your requirements. Quality products backed by careful inspection—prompt shipments, with intelligent cooperation through understanding of the customer's needs—these are some of the reasons which make Tennessee a desirable source of supply.

Products: Structural Shapes, Plates, Bars and Small Shapes, Sheets (Blue Annealed, Black and Galvanized), Rails and Accessories, Forgings Castings, Semi-Finished Products, Pig Iron.

Tennessee Coal, Iron & Railroad Co.

General Offices: Brown-Marx Bldg., BIRMINGHAM, ALA.

Subsidiary of United States Steel Corporation

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.25c, Conn., for copper

SHEETS	
Yellow brass (high)	12.50
Copper, hot rolled	15.37½
Lead sheets, cut, to jobbers	7.00
Zinc sheets (100-lb. base)	9.00
TUBES AND PIPES	
Seamless yellow brass (high)	15.25
Seamless copper	14.37½
RODS	
Yellow brass (high, full turning)	10.25
Naval brass	11.37½
ANODES	
Copper, untrimmed	12.25
WIRE	
Yellow brass (high)	12.50

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	2.87½ to 3.00
Chicago	2.25 to 2.50
Cleveland	2.50 to 2.75
St. Louis	2.50
HEAVY YELLOW BRASS	
New York	1.87½ to 2.00
HEAVY COPPER AND WIRE	
New York	3.62½ to 3.87½
Chicago, No. 1	3.25 to 3.50
Cleveland	2.75 to 3.00
St. Louis	2.75
COMPOSITION BRASS BORINGS	
New York	2.50 to 2.75
YELLOW BRASS TUBING	
Cleveland	1.50 to 2.00
LIGHT COPPER	
New York	2.87½ to 3.00
Chicago	2.25 to 2.50
Cleveland	2.25 to 2.50
St. Louis	2.50
LIGHT BRASS	
Chicago	1.25 to 1.50
Cleveland	1.00 to 1.25
St. Louis	1.50
LEAD	
New York	2.00 to 2.25
St. Louis	2.00
ZINC	
New York	1.12½ to 1.25
Cleveland	1.00 to 1.12½
St. Louis	1.25
ALUMINUM	
Clippings, new, soft, Cleve.	9.50 to 10.00
Clippings, hard, Cleveland	7.00 to 8.00
Borings, Cleveland	3.00 to 3.50
Mixed cast, Cleveland	4.00 to 5.00
Mixed cast, St. Louis	3.00 to 3.25

Secondary Metals

Remelt aluminum No. 12	8.00 to 9.00
Brass ingot, 85-5-5-5	5.75

Metals

Copper Trade Awaits Outcome Of World Conference—Tin Is Easier—Lead and Zinc Slow

New York—Little activity developed in the metals during the past week with the Thanksgiving holiday only serving to accentuate the quiet situation which obtained.

Copper—Electrolytic metal continued available from custom smelters at 5.37½c, Connecticut, for delivery during the remainder of 1932 and at 5.50c for first quarter shipment. Lake copper producers reduced their prices ¾-cent to the basis of 5.50c, delivered Midwest, for arsenical and 5.62½c for high conductivity. Mine producers of electrolytic continued out of the market at the nominal asking price of 6.25c, Connecticut. Trading was at virtually a standstill with both consumers and sellers apparently awaiting the outcome of the world conference of producers which gets under way here Tuesday of this week. Problems have arisen for the copper industry over the past year which will be difficult to surmount.

Lead—Quietness generally ruled in the market with sales confined largely to carlots for early delivery. Quotations showed no further change following the drop of $3 a ton in the preceding week. Sales of producers last week were reported to have been less than the ore intake. If this situation continues there is possibility of a further reduction in prices.

Zinc—Prime western metal held steady during the week but buying was light. Prices were given support by the continued decline in Tri-State ore stocks, which now are the lowest since early 1931. Sales were confined to scattered carlots. High-grade metal continued firm due to the relatively smaller stocks of that grade.

Tin—Straits metal was in extremely slow demand last week. As a result prices were largely nominal. Quotations moved downward under the influence of the London market and weakness in sterling exchange. At the close of the week, Straits metal for nearby delivery could be had at under 23.00c.

Antimony—Quotations eased somewhat due to the continued dullness in demand.

Aluminum—Virgin metal continued quiet and unchanged. Remelt held firm and was reported in slightly better demand from the automobile industry.

Distillates Steady

New York—Demand for distillates is light, and prices unchanged. Expansion of toluol sales has been slow, but distributors expect a slight improvement shortly from the lacquer trade. Sulphate of ammonia is dull. December prices are about to be announced. Contracting in naphthalene is starting slowly. A small but steady trade continues in phenol.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.30
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.153 to 0.173
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.0525

Quicksilver Slow

New York—Quicksilver prices are unchanged this week, sellers asking $49 a virgin flask of 76 pounds for round lots, and $50 a flask for small. Some prices on small lots range up to $51. The market is quiet.

Nonferrous Metal Prices of the Week, Cents a Pound

Spot unless otherwise specified

	Copper			Straits Tin		Lead	Lead	Zinc	Aluminum	Antimony	Ingot
	Electro., del. Conn.	Lake, del. Midwest	Casting refinery	New York Spot	New York Futures	N. Y.	East St. L.	St. L.	98-99%	Spot, N. Y.	Nickel
Nov. 19	5.37½	6.37½	6.12½	24.40	23.50	3.00	2.90	3.15	22.90	5.87½	35.00
Nov. 21	5.37½	5.62½	5.12½	23.35	23.45	3.00	2.90	3.15	22.90	5.80	35.00
Nov. 22	5.37½	5.62½	5.12½	23.20	23.30	3.00	2.90	3.15	22.90	5.75	35.00
Nov. 23	5.37½	5.62½	5.12½	23.00	23.10	3.00	2.90	3.15	22.90	5.75	35.00
Nov. 24—Holiday											
Nov. 25	5.37½	5.62½	5.12½	22.70	22.80	3.00	2.90	3.15	22.90	5.75	35.00

Pacific Coast

Oakland Bridge, Taking About 200,000 Tons of Steel, to Be Open for Bids About Dec. 1.—Better Movement of Steel Is Seen and Future Needs Gain in Volume—Prices Holding Well

San Francisco (*By Air Mail*)—The structural shape and reinforcing steel bar markets were the most active during the past week and a fair tonnage was reported placed. It is expected that bids for the San Francisco-Oakland bridge, involving close to 200,000 tons of steel, will be released for figures around Dec. 1 and that the contract will be awarded before the first of the year. Little or no change has occurred in prices.

Awards of reinforcing steel bars were the largest in over three weeks and aggregated over 1200 tons. Gunn, Carle & Co. secured 200 tons for hospital wards at Fort Mason, Calif. Unnamed interests booked 162 tons for highway work in Ventura county, California, for the state. No award has been made on over 5000 tons for the Golden Gate bridge, San Francisco, but in all likelihood the contract will be placed within the next week.

Moore Drydock Co. secured the contract for repairing the S. S. CATHWOOD, involving over 100 tons of bottom plates. The navy department has awarded 400 tons of plates for Mare Island, Calif., to Alan Wood Steel Co. and Worth Steel Co. Bids have been opened on 163 tons of plates and sheets for Mare Island, Calif. Prices are general at 2.00c, c.i.f.

A number of structural awards were reported, the total being close to 2000 tons. The Consolidated Steel Corp. booked 348 tons for the San Simeon bridge in California, 157 tons for a bridge near Alpine, Calif., and 100 tons for the Culver boulevard crossing in Los Angeles. Largest new inquiry involves 700 tons for the San Francisco postoffice addition, bids to be opened Dec. 28.

Unnamed interests obtained 133 tons of 12-inch cast iron pipe for Hayward, Calif., and 168 tons of 6-inch pipe for Oahu, T. H. American Cast Iron Pipe Co. is low on 319 tons for Burbank, Calif. Bids have been opened on 217 tons for Huntington Park, Calif.

Federal Projects Lead

Seattle—Federal projects are providing most of current demand for iron and steel products in the Pacific Northwest. Much public work is planned by counties and municipalities but R. F. C. funds are awaited. American cast iron and machinery manufacturers are gratified that only American material and output may be used where government funds are advanced.

Washington will open bids Dec. 13 for a state highway girder concrete bridge, 212 feet in length, in Walla Walla county. The Bonners Ferry bridge over Kootenai river, Boundary county, Idaho, involving 171 tons of reinforcing, shapes and cast steel, will be awarded by the Idaho commissioner of public works at Boise, Dec. 1. Mansen Construction Co., Opportunity, Wash., is low bidder at $26,394 for a bureau of roads bridge over Beaver creek, Sanders county. Montreal, involving 46 tons of shapes and 41 tons of reinforcing.

E. A. Cleveland, chief commissioner, Greater Vancouver water district, Bekins building, Vancouver, B. C., will open bids Jan. 4 for 3980 feet of 60-inch electrical weld steel water pipe for Capilano main No. 4 Proposals for alternative types of pipe are also requested.

Steel in Europe

British and Continental Trade Shows More Confidence

London—(*By Radio*)—Confidence is definitely returning, owing to the brighter outlook for next year's trade. Both domestic and export trade are widening. Finland has ordered a substantial tonnage of rails and South Africa and India have placed a number of engineering contracts with British engineers. Sheet sales to the Far East have increased but sales of galvanized sheets are slow.

Reports from the Continent continue fair, with French and German exports expanding. In Belgium and Luxemburg trade is calmer but mills there are well booked. The recent increase of prices is now halted.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Nov. 23

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
		£ s d		£ s d
PIG IRON				
Foundry, 2.50-3.00 Silicon	$ 9.51	2 18 6	$8.27	1 14 0
Basic bessemer	8.78	2 14 0*	6.81	1 8 0
Hematite, Phos. .03-.05	9.59	2 19 0	.....	.....
SEMIFINISHED STEEL				
Billets	$15.84	4 17 6	$10.71	2 4 0
Wire rods, No. 5 gage	24.38	7 10 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$25.19	7 15 0	$26.77	5 10 0
Merchant bars	.91c	6 5 0	.66c	3 0 0
Structural shapes	1.07c	7 7 6	.50c to .51c	2 5 0 to 2 6 0
Plates, †¼ in. or 5 mm.	1.27c	8 15 0	.72c to 73c	3 5 0 to 3 6 0
Sheets, black, 24 gage or 0.5 mm.	1.20c	8 5 0	1.29c	5 17 6
Sheets, gal., 24 gage, corr.	1.45c	10 0 0	1.49c	6 15 0
Bands and strips	1.12c	7 15 0	.77c to .80c	3 10 0 to 3 12 6
Plain wire, base	1.38c	9 10 0	1.18c	5 7 6
Galvanized wire, base	1.67c	11 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.60c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.60	0 16 0	$3.20	0 13 2

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

		£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$ 9.51	2 18 6	$ 8.02	205(2)	$ 8.31	300	$16.39	69
Basic bessemer pig iron	8.78	2 14 0*	6.65	170(1)	7.48	270	17.94	75.50
Furnace coke	1.95	0 12 0	4.85	124	3.05	110	4.56	19.20
Billets	16.25	5 0 0	14.47	370	10.80	390	22.93	96.50
Standard rails	1.20c	8 5 0	1.25c	697	1.50c	1,150	1.37c	127
Merchant bars	.98c	6 15 0	.95c	530	.68c	525	1.19c	110
Structural shapes	1.27c	8 15 0	.99c	550	.64c	490	1.16c	107.50
Plates, †¼-in. or 5 mm.	1.31c	9 0 0	1.17c	650	.78c	600	1.37c	127
Sheets, black	1.34c	9 5 0§	1.44c	800‡	.88c	675‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	1.63c	11 5 0	2.83c	1,570	1.87c	1,440	4.00c	370
Plain wire	1.38c	9 10 0	2.03c	1,130	1.69c	1,300	1.92c	178
Bands and strips	1.38c	9 10 0	1.04c	580	.83c	640	1.37c	127

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price.
British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.

STEEL, WROUGHT AND CAST IRON PIPE, AND TUBING

Welded Iron, Steel Pipe □

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to consumers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

In.	Steel Blk.	Steel Gal.	In.	Iron Blk.	Iron Gal
⅛ & ¼	57	34	½	28	10½
⅜	62	49½	¾	33	16½
½	65½	55	1—1¼	36	20½
¾	67½	57	2	38	21

LAP WELD

2	61	50½	2	26	12½
2½ to 6	64½	54	2½—3½	33	18½
8	62	51	4—6	35	22
10	60	49	7—8	34	21½
12	59	48	9—12	31	16½

BUTT WELD

Extra strong, plain ends

⅛	48	33	¼ & ⅜	+7	+41
¼ & ⅜	53½	38½	½	28	12½
½	59	49½	¾	33	17½
¾	63½	54	1—2	39	23

LAP WELD

Extra strong, plain ends

2	59	49½	2	34	18½
2½ to 4	62½	53	2½—4	39	25
5 & 6	62	52½	4½—6	38	24
8	58	47	7 & 8	36	22
10	51½	40½	9—12	26	13½
12	50½	39½			

STEEL LINE PIPE

2 to 3 butt	66½	2½ to 6 lap	63½
2 lap	60	8 lap	61
10 lap	59	12 lap	58

Discounts on steel pipe are net and not subject to any point or preferential. On iron pipe, the discounts shown on the cards are net, and are not subject to any further discounts or preferentials.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		*Charcoal Iron*	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
1½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½ 5, 6	46

Quantity discounts are: Under 10,000 pounds, 10 points and 5 per cent; 10,000 to 24,999 pounds, 6 points and 5 per cent; 25,000 pounds to carload, 2 points and 5 and 5 per cent; carload and over, base discount and 5 and 5 per cent. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing □ □

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe □ □

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$32.00 to 33.00
Four-inch, Birmingham .... 36.00 to 37.00
Four-inch, Chicago ..... 43.40 to 44.40
Six to 24-inch, Chicago..... 40.40 to 41.40
Six-inch and over, N. Y... 32.00 to 34.50
Four-inch, New York ..... 34.50 to 36.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore*	2.35c
Boston	3.25c
Buffalo	2.95c
Chattanooga..	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los. Ang.	3.30c
New York‡(d)	3.10c
Philadelphia..	2.45c
Pittsburgh	2.60c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	2.35c
Boston	3.25c
Buffalo	3.15c
Chattanooga..	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia..	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.35c-3.00c
Boston	3.10c-3.25c
Buffalo	2.95c
Chattanooga..	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los. Ang. cl...	2.10c
Los Ang., lcl	2.40c
New York....	2.65c-3.10c
Phila.	2.26½c
Pittsburgh	2.60c
San Fran. cl.	2.40c
San Fran. lcl	2.80c
Seattle	3.00c
St Louis	3.15c
Tulsa	3.25c
Young	2.30c-2.60c

SHAPES

Baltimore*	2.35c
Boston	3.35c
Buffalo	3.20c
Chattanooga.	3.20c
Chicago	3.00c
Cincinnati ...	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	3.30c
New York(d)	3.10c
Philadelphia..	2.45c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St Louis	3.25c
St Paul	3.25c
Tulsa	3.50c

PLATES

Baltimore*	2.35c
Boston	3.35c
Buffalo	3.20c
Chattanooga.	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles..	3.30c
New York(d)	3.30c
Philadelphia..	2.45c
Phila. floor....	5.10c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE

Baltimore*	2.80c
Boston	3.50c
Buffalo	3.45c
Chattanooga..	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.60c
N. Y.	3.00c
Portland	4.00c
Phila.*† (e)....	2.90c
Pitts.**	3.00c
San Fran.	3.50c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	3.70c
Chattanooga..	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.20c
New York ..	3.75c-4.00c
Phila.*†(e) ..	3.40c
Pitts.**	3.40c
Portland	4.50c
San Fran.	3.90c
Seattle	4.50c
St Louis	3.80c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.05c
Chattanooga.	3.95c
Chicago	4.10c
Cincinnati ...	4.25c
Cleveland	3.75c
Detroit	3.75c
Houston	4.25c
Los. Ang.	4.50c
New York...4.00c-4.10c	
Phila.*†(e)	3.75c
Pitts.**	3.90c
Portland	5.00c
San. Fran.	4.55c
Seattle	5.00c
St. Louis	4.35c
St. Paul	4.19c
Tulsa	5.10c

†BANDS

Baltimore	2.65c
Boston	3.75c
Buffalo	3.30c
Chattanooga..	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter....	3.15c
Houston	3.65c
Los Ang.	3.80c
New York(d)	3.30c
Philadelphia..	2.75c
Pittsburgh	2.95c
Portland	3.85c
San Fran.	3.15c
Seattle	3.50c
St. Paul	3.20c
Tulsa	3.45c

†HOOPS

Baltimore	2.65c
Boston	4.90c
Buffalo	3.95c
Chicago	3.50c
Cincinnati	3.75c
Det. No. 14 & lighter....	3.30c
New York	3.30c
Philadelphia..	3.00c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	3.75c

†New extras apply.

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)*	3.48c
Boston	3.60c
Buffalo	3.00c
Chattanooga*	3.68c
Chicago	3.00c
Cincinnati	3.32c
Cleveland	2.95c
Detroit	3.15c
Los Ang. (a)	4.25c
New York	3.39c
Philadelphia*	3.35c
Pittsburgh	2.95c
Portland (a)	4.50c
San Fran. (d)(f)	5.55c
Seattle (a)....	4.50c
St. Paul (a)..	3.20c
St. Louis	3.36c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.25c
Chicago (b)...	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c).....	4.55c
New York	4.55c

(a) Rounds, hex, only.
(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
‡Domestic bars.
*Plus quan. extras.
**Less than 25 sheets.
*†50 or more bundles.

STATISTICS OF IRON AND STEEL INDUSTRY

Compiled by department of commerce, except: Unfilled tonnage by United States Steel Corp.; foundry equipment orders by Foundry Equipment Manufacturers association; river traffic by United States engineer at Pittsburgh.

Automobiles

Units Production

1931	United States—Total*	United States—Passenger cars	Canada Total
Sept.	140,566	109,087	2,646
9 Mo.	2,119,188	1,764,353	77,502
Oct.	80,142	57,764	1,440
Nov.	68,867	48,185	1,247
Dec.	121,541	96,753	2,432
Yr.	2,389,738	1,967,055	82,621
1932			
Jan.	119,344	98,706	3,731
Feb.	117,413	94,085	5,477
Mar.	118,959	99,325	8,318
April	148,326	120,906	6,810
May	185,149	151,683	8,221
June	183,092	160,103	7,112
July	111,141	94,678	7,472
Aug.	90,324	75,898	4,067
Sept.	84,141	64,735	2,342
9 Mo.	1,157,029	966,119	53,550

*Difference of total and passenger cars equals number of trucks. †Average monthly shipments, 1922-23-24 taken as 100.

Fabricated Shapes

Net Tons

1931	Bookings Tonnage	Bookings Per cent of capacity	Shipments Tonnage	Shipments Per cent of capacity
Sept.	194,400	48.6	149,200	37.3
9 Mo.	1,583,200	44.0	1,433,600	39.8
Oct.	109,200	27.3	143,600	35.9
Nov.	90,800	22.7	111,600	27.9
Dec.	97,600	24.4	122,800	30.7
Yr.	1,880,800	39.2	1,811,600	37.7
1932				
Jan.	48,400	12.1	65,600	16.4
Feb.	62,000	15.5	78,000	19.5
Mar.	64,400	16.1	82,400	20.6
April	64,800	16.2	68,400	17.1
May	90,800	22.7	72,400	18.1
June	86,800	21.7	83,200	20.8
July	69,200	17.3	83,600	20.9
Aug.	78,800	19.7	85,600	21.4
Sept.	111,200	27.8	90,800	22.7
9 Mo.	676,400	18.8	711,200	19.8

Fabricated Plates

Net Tons Bookings

1931	Total	Oil Storage Tanks	Miscellaneous
Sept.	33,473	4,024	18,692
9 Mo.	246,960	32,858	168,565
Oct.	20,839	1,955	16,336
Nov.	18,268	1,755	15,058
Dec.	16,442	778	13,891
Yr.	302,509	37,346	213,850
1932			
Jan.	17,613	4,783	12,124
Feb.	17,755	4,115	11,777
Mar.	12,564	1,161	10,022
April	14,074	1,406	11,167
May	11,788	2,310	9,356
June	18,383	2,808	10,209
July	12,485	3,661	6,586
Aug.	11,916	4,394	6,911
Sept.	11,013	3,753	6,801
9 Mo.	127,591	28,441	87,862

Railroad Locomotives

Units Shipments

1931	Domestic	Foreign
Sept.	7	..
9 Mo.	133	12
Oct.	11	1
Nov.	7	..
Dec.	2	..
Yr.	150	16
1932		
Jan.	..	..
Feb.	1	4
Mar.	..	3
April	8	0
May	13	2
June	17	..
July	9	..
Aug.	9	..
Sept.	9	4
9 Mo.	66	13

Foundry Equipment Order Index†

1931	
Sept.	31.9
9 Mo.	....
Oct.	44.8
Nov.	17.2
Dec.	26.3
Yr.	....
1932	
Jan.	20.5
Feb.	27.6
Mar.	27.5
April	13.7
May	18.0
June	14.2
July	18.7
Aug.	18.6
Sept.	11.9
9 Mo.	....

†Average monthly shipments, 1922-23-24 taken as 100.

Malleable Castings

Net Tons

1931	Output	Shipments	Orders booked
Sept.	18,485	18,727	17,854
9 Mo.	251,922	296,626	245,182
Oct.	20,444	17,802	18,558
Nov.	17,984	18,336	18,971
Dec.	21,503	20,206	19,811
Yr.	311,853	325,970	302,522
1932			
Jan.	22,216	21,572	22,036
Feb.	21,578	21,325	19,709
Mar.	19,597	21,337	18,046
April	16,758	18,328	17,630
May	17,430	18,953	17,297
June	15,143	16,503	13,512
July	9,703	11,554	8,881
August	7,038	8,879	7,992
Sept.	10,168	9,778	10,768
9 Mo.	139,631	148,229	135,871

Steel Castings

Net Tons

1931	Total bookings	Total production
Sept.	23,073	26,948
9 Mo.	329,941	367,936
Oct.	22,854	24,113
Nov.	20,001	23,139
Dec.	20,799	22,064
Yr.	393,595	437,252
1932		
Jan.	17,393	18,395
Feb.	17,015	18,759
Mar.	16,593	20,433
April	12,801	17,474
May	11,342	14,463
June	12,765	12,839
July	9,301	11,460
August	10,147	12,331
Sept.	11,883	11,337
9 Mo.	119,186	137,583

Mechanical Stokers

—Sales—

1931	Fire tube boilers	Water tube boilers
Sept.	279	57
9 Mo.	1,371	462
Oct.	231	54
Nov.	170	36
Dec.	117	22
Yr.	1,889	574
1932		
Jan.	70	45
Feb.	63	26
Mar.	60	23
April	80	15
May	41	30
June	65	48
July	70	44
August	99	38
Sept.	117	46
9 Mo.	665	313

Steel Furniture

Dollars, 000 omitted

1931	Business shipments	Shelving, shipments
Sept.	1,188	310
9 Mo.	12,178	3,605
Oct.	1,078	310
Nov.	956	226
Dec.	1,075	298
Yr.	15,287	4,440
1932		
Jan.	977	269
Feb.	807	229
Mar.	780	259
April	753	190
May	653	196
June	671	177
July	521	155
August	543	141
Sept.	577	146
9 Mo.	6,287	1,764

Babbitt Metal

Pounds 000 omitted

1931	(a) Total production	(b) Sales
Sept.	1,851	1,355
9 Mo.	20,531	14,685
Oct.	2,047	1,495
Nov.	1,846	1,239
Dec.	1,624	1,047
Yr.	26,020	18,438
1932		
Jan.	1,743	1,281
Feb.	1,577	1,142
Mar.	1,595	1,188
April	1,419	1,060
May	1,345	947
June	1,319	858
July	1,275	870
August	1,319	994
Sept.	1,406	1,108
9 Mo.	13,002	9,451

(a) by 40 plants. (b) by 30 manufacturers who produce for sale, including 5 who also report consumption of own metal.

Galvanized Ware

Dozens Production

1931	Pails, Tubs	Other Ware
7 Mo.	844,212	206,198
Aug.	136,003	34,709
8 Mo.	.....	.....
Sept.	110,253	32,276
9 Mo.	.....	.....
Oct.	98,340	26,626
Nov.	67,145	15,760
Dec.	72,558	11,758
Year	1,326,511	327,327
1932		
Jan.	87,096	13,612
Feb.	110,474	21,472
March	121,322	24,063
April	126,162	19,345
May	89,892	23,273
June	89,607	25,911
July	75,989	15,184
7 Mo.	700,542	142,860
Aug.	.....	.....
8 Mo.	.....	.....
Sept.	.....	.....
9 Mo.	.....	.....

Enameled Ware‡

Dozens Production

1931	Total‡	Gray, Colored
7 Mo.	.....	.....
Aug.	251,544	160,998
8 Mo.	2,146,719	1,400,689
Sept.	307,068	209,433
9 Mo.	.....	.....
Oct.	255,782	173,916
Nov.	197,080	134,176
Dec.	233,267	178,702
Year	3,189,916	2,096,916
1932		
Jan.	198,627	140,654
Feb.	270,198	187,299
March	276,725	196,491
April	195,540	132,050
May	193,434	125,676
June	178,296	61,016
July	169,974	117,567
7 Mo.	.....	.....
Aug.	202,847	140,731
8 Mo.	1,685,892	1,157,803
Sept.	.....	.....
9 Mo.	.....	.....

‡Total less gray and colored is production of white.

Steel Barrels

Units

1931	Production	Shipments
7 Mo.	.....	.....
Aug.	.....	.....
8 Mo.	.....	.....
Sept.	451,562	452,960
9 Mo.	4,659,390	4,690,499
Oct.	489,555	492,145
Nov.	453,547	444,201
Dec.	382,483	385,435
Year	5,984,975	6,010,280
1932		
Jan.	359,685	352,135
Feb.	367,472	369,882
March	452,294	453,621
April	447,379	452,191
May	427,299	425,662
June	651,916	654,561
July	352,614	353,336
7 Mo.	.....	.....
Aug.	362,993	360,509
8 Mo.	.....	.....
Sept.	395,640	398,241
9 Mo.	3,824,085	3,826,931

River Traffic

Net Tons

1931	Allegheny	Monongahela	Ohio
7 Mo.	.....	.....	.....
Aug.	.....	.....	.....
8 Mo.	.....	.....	.....
Sept.	8,525	25,508	49,269
9 Mo.	18,172	401,800	604,004
Oct.	2,705	24,383	49,059
Nov.	5	24,338	42,247
Dec.	.....	21,360	51,138
Year	20,882	471,881	746,448
1932			
Jan.	.....	25,327	45,199
Feb.	2,203	20,089	40,737
March	550	32,234	33,254
April	501	23,849	32,972
May	2,550	23,941	28,267
June	3,611	18,291	27,306
July	2,400	13,677	22,895
7 Mo.	.....	.....	.....
Aug.	3,400	26,390	43,621
8 Mo.	.....	.....	.....
Sept.	1,203	18,831	28,557
9 Mo.	15,412	196,629	302,808

Unfilled Tonnage

Tons United States Steel Corp.

1931	Unfilled orders	Net change	Per cent change
7 Mo.	.....	.....	....
Aug.	.....	.....	....
8 Mo.	.....	.....	....
Sept.	3,144,833	24,624—	0.77—
9 Mo.	.....	....	....
Oct.	3,119,432	25,401—	0.30—
Nov.	2,933,891	185,541—	5.94—
Dec.	2,735,353	198,538—	6.77—
Year			
1932			
Jan.	2,648,150	87,203—	3.19—
Feb.	2,545,629	102,521—	3.88—
March	2,472,413	73,216—	2.87—
April	2,326,926	145,487—	5.88—
May	2,177,162	149,764—	6.44—
June	2,034,768	142,394—	6.54—
July	1,966,302	68,466—	3.36—
7 Mo.	.....	.....	....
Aug.	1,969,595	3,293+	0.16+
8 Mo.	.....	.....	....
Sept.	1,985,090	15,495+	0.78+
9 Mo.	1,977,040	11,950+	0.62+

Equipment

Improvement Lacking—Look to Rehabilitation Programs

New York—A scattering of awards for government shops, inquiry for a few tools for technical schools and some fair buying of equipment by the General Electric Co. for production of its new refrigerator model furnishes the bulk of activity in the machinery and equipment field. Volume shows little change for the better, but sentiment is slightly improved. While part of the business placed by the General Electric Co. is for rebuilding, some new tools were purchased.

E. W. Bliss Co. has booked a power press for the navy and the Niagara Tool Works an inclinable press. Swind Machinery Co. is low on a grinder for Puget Sound at $5255; Lake Erie Engineering Corp. on a copper pipe bending machine for Brooklyn; McCabe Mfg. Co. on a flanging machine, Brooklyn, and Monarch Machine Tool Co. on an engine lathe for Norfolk.

Worcester, Mass.—Several New England machine builders have booked some volume from the General Electric Co., Schenectady, N. Y., equipment to be used in the production of that company's new refrigerator model. A Worcester grinding tool maker and a Bridgeport, Conn., plant shared in this business, a good part of which is of a rebuilding nature. In general, however, there has been little improvement in the demand for machinery and most shops are operating on short schedules.

On a gate shear for the Boston navy yard, Hilyard-Newbold Co., Norristown, Pa., is low with a bid of $8800. Bearing plants are operating at about the recent current rate, a good part of the volume being of a special type and for rush delivery. In general machine equipment, the demand follows much the same trend. Bids close this week on two screw-cutting engine lathes for the Boston navy yard shops and Dec. 6 on a hobbing machine for the same plant.

Pittsburgh—Thomas Spacing Machine Co., Glenshaw, Pa., is consigning the first of three punching machines recently ordered to Russia. The machine, embodying a multiple punching device with an automatic spacing table, weighs 100 tons and will be installed in a structural fabricating plant in Russia. The total order for all three machines is reported to have involved approximately $1,000,000.

Plans of a leading steel mill in this district to make several plant expenditures are being withheld for at least another three of four weeks.

Cleveland—Buying of equipment continues generally sporadic with both inquiries and awards covering only small lots of individual machines. A hoped-for spurt in automobile buying around show time would probably be reflected in equipment purchases by some of the leading builders. Removal of manufacturing, engineering and sales headquarters of Pierce-Arrow truck from Buffalo to Cleveland, may result in minor equipment purchases by this interest.

Bids close Dec. 5 on a list of equipment for Wright Field, Dayton, O., including sheet metal cutter, power squaring shears, sheet metal brakes, combination turning machine, heavy-duty slitting shear, ring and circular shear, slip roll formers, scroll shear, lever slitting shear, rotary blade type shears and others.

Chicago—Orders for machine tools and plant equipment lack improvement but are fairly steady, and inquiry is well maintained. A number of plants are inaugurating rehabilitation programs, the largest being the International Harvester o. which is spending more than $1,000,000 for new equipment at various plants. A number of machine tools have been purchased for the Ft. Wayne plant of this company, including used equipment as well as new tools. One list for six new tools recently has been pending. The company shortly will produce a new small tractor and will build bodies for a new ½-ton truck, motor and chassis of which will be manufactured by the Willys-Overland Co. United States Gypsum Co. has started plant extensions involving an expenditure of $400,000 and including the purchase of some equipment.

Reports to the industrial rehabilitation committee for this district show that about $28,000 will be spent for machinery and equipment by a number of plants in the Chicago suburban district, while $72,000 will be expended in Bloomington, Peoria, and Sterling, Ill. Wisconsin manufacturing plants report plans for an expenditure of $819,000, with the total for the entire seventh federal reserve district $2,439,526.

Here and There in Industry

BRISTOL CO., Waterbury, Conn., has established a plant at London, Eng., under the name of Bristol's Instrument Co. Ltd. Howard H. Bristol, president of the Bristol Co., is chairman of the board of the new company, and Alexander L. Dugon, of J. W. & C. J. Phillips Ltd., is vice chairman and managing director. The company for many years has been in charge of Bristol sales in England. Establishment of the new plant follows recent trade developments in the British Empire. The factory is located at 144 Pomeroy street, New Cross, London. An office building and a new 2-story factory building constitute the plant, with complete equipment for manufacture and service.

□ □ □

Philadelphia Steel Sales Co. has been appointed representative at Philadelphia of the Endicott Forging & Mfg. Co., Endicott, N. Y.

□ □ □

Whitcomb Locomotive Co., Rochelle, Ill., subsidiary of the Baldwin Locomotive Works, has acquired the business, inventory and goodwill of the Milwaukee Locomotive Mfg. Co., Milwaukee, a subsidiary of the Westinghouse Air Brake Co., the latter through the sale becoming a stockholder in the Whitcomb company.

□ □ □

Great States Corp., Richmond, Ind., is removing its lawnmower manufacturing department to Shelbyville, Ind., where it will occupy the plant of the former Indiana Furniture Co. T. P. Nickell is president. Production will be started as soon as possible with 100 workers.

□ □ □

Jones & Laughlin Steel Corp., Pittsburgh, is exhibiting a display of its products in the banking rooms of the Union Trust Co., Pittsburgh. The exhibit is the one for which the company was awarded first prize as the most interesting display in the National Metal Exposition at Buffalo, early in October.

□ □ □

B. F. Sturtevant Co., Hyde Park, Boston, has purchased the Cooling & Air Conditioning Corp. of New York, moving headquarters to its Hyde Park plant. The Sturtevant company founded and until recently partly owned the Cooling & Air Conditioning Corp. The combined organizations will be known as the Sturtevant-Cooling & Air Conditioning Co.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

FRAMINGHAM, MASS. — Colonial Beacon Oil Co., 30 Beacham street, Everett, Mass., will build a bulk oil terminal, including storage tanks, warehouse and garage, to cost about $18,000.

New York

BUFFALO, N. Y.—Niagara Metals Co., 44 West Seneca street, has been organized to deal in old and new metals.

BUFFALO, N. Y.—J. L. Osgood Machinery & Tool Co. suffered about $15,000 damage by fire in the adjoining plant of the J. A. Webb Belting Co.

BUFFALO, N. Y.—Industrial Plants Corp., New York, will sell at public auction Nov. 29 and 30 the building, machinery, equipment and supplies of the Art Work Shop, 828 East Ferry street. Sale includes dies and finishing tools for manufacture of automobile handles, accessories and hardware for the automotive industry.

NEW YORK—Paramount Metal Ceiling Co. has been incorporated with $10,000 capital by N. Frank, 299 Broadway, New York.

NEW YORK—Continental Can Co. is having plans and estimates prepared for additions to its equipment and modernization to cost about $150,000.

NEW YORK—Electrolift has been incorporated with 200 shares no par value to manufacture hoists and cranes, by W. Huck Jr., 43 Cedar street, New York.

NEW YORK—Universal Sewage Corp. has been incorporated with 100 shares no par value to manufacture sewage disposal systems, by Kadel, VanKirk & Trencher, 2804 Third avenue, New York.

NEW YORK—E-Z Cutting Device Corp. has been incorporated with 200 shares no par value to manufacture machinery, by Emery & Pyne, 20 Exchange place, New York.

NIAGARA FALLS, N. Y.—Isco Chemical Corp. will build a boilerhouse of brick, steel and concrete, costing $50,000 exclusive of equipment.

ROCHESTER, N. Y.—New York Central Electric Corp., 89 East avenue, plans construction of a gas plant and distribution system at Spring Water, N. Y., to cost about $17,000.

New Jersey

EAST ORANGE, N. J.—The Centrifuge Co. has been incorporated with 100 shares no par value to manufacture iron and steel products.

GARWOOD, N. J.—Robinson Welding & Engineering Corp. has been incorporated with $125,000 capital to do a general welding and engineering business, by W. O. Morgan, 244 South Mountain avenue, Montclair, N. J.

NEWARK, N. J.—Durolac Chemical Corp., 71 Paris street, Newark, is having plans drawn for a 2-story plant at 84 Lister avenue, to cost $40,000.

PALISADE PARK, N. J.—New Era Power Pump Corp. of America has been incorporated with $100,000 preferred stock and 10,000 shares no par value to manufacture centrifugal power pumps, by Joseph M. Rotolo, Palisades Park, N. J.

PATERSON, N. J.—Master Products Co. Inc. has been incorporated with 2500 shares no par value to manufacture machinery, by Koch & Simon, 146 Washington street, Paterson, N. J.

SOUTH PLAINFIELD, N. J.—Rock Bit Co. Inc. has been incorporated with $60,000 capital to manufacture conveyors and other machinery, by Harlan E. Cecil, 120 Liberty street, New York.

Pennsylvania

PHILADELPHIA—National Pigment Corp. has been incorporated with $5000 capital to manufacture, smelt, refine and sell pigments, by Irving Fisher, 125 Roseberry street, Philadelphia.

Ohio

GALION, O.—City is having surveys made by Hadlow, Hughes, Hick & Conrad, architects and engineers, Citizens building, Cleveland, for an addition to the municipal light plant and replacing equipment with new, at cost of $200,000.

Michigan

DETROIT—A. R. Feliciana, 3943 McGraw avenue, plans to build a 6-story, 100 x 400-foot seaway terminal warehouse, including elevators and conveyor systems.

DETROIT—National Steel Corp. is making plans for modernization and rehabilitation program which will involve expenditure of about $900,000 in its various plants.

DETROIT—Detroit Utility Supply Co. Inc. has been incorporated with $5000 capital to manufacture electrical equipment, by Floyd D. Hartford, 1472 Lawrence avenue, Detroit.

DETROIT—Bids will be opened Jan. 18, 1933, by L. G. Lenhardt, commissioner of public works, for four incinerators, one of 600 tons daily capacity. Plans are nearing completion.

DETROIT—Great Lakes Dredge & Dock Co., Cleveland, has been awarded a contract for dredging about 1,355,000 cubic yards in the Livingston channel of Detroit river for United States engineers.

DETROIT—Replacement Equipment Corp., care R. B. Miller, Hotel Belcrest, has been incorporated to manufacture wheels, rims and spokes, with 100 shares no par value, by Theodore Sirene, Dime Savings Bank building, Detroit.

MT. CLEMENS, MICH.—Figures are being taken by Lieut. Walters, construction quartermaster at Selfridge field, for a garage building at $40,000 and a maintenance building at $20,000. Bids due Dec. 1.

Indiana

ELKHART, IND.—Finnell Rotary Stokers Inc. has been incorporated with 500 shares no par value to manufacture stokers and other fuel-handling equipment, by Gerald Mahoney, William L. Stuyverson and James R. Nyce.

HUNTINGTON, IND.—Economy Machine & Tool Co. Inc. has been incorporated with $25,000 capital to conduct a general machine and auto repair business, by William J. Meier and associates.

INDIANAPOLIS—Paul R. Jordan & Co. have been incorporated with 1000 shares no par value to manufacture machinery, by Paul R. Jordan, A. F. Glazier and Charles E. Woolen.

SOUTH BEND, IND.—Notre Dame university is having plans drawn for a chemistry building for which equipment will be needed. Estimated cost is $250,000.

Illinois

CHICAGO—Boyce Tie Plate Co., 310 South Michigan avenue, has been incorporated with $10,000 capital to engage in the general railroad supply business, by William S. Boyce, 310 South Michigan avenue, and associates.

NEW LENOX, ILL.—City plans to erect a pumping station and equip it for water supply, at a cost of about $10,000.

Southern States

WASHINGTON — Included in new Greyhound Lines bus terminal on New York avenue, Fourteenth and Fifteenth streets N.W., is a garage 115 x 300 feet, including machine, blacksmith and paint shops to service 122 buses.

WASHINGTON—Bureau of supplies and accounts, navy department, will take bids until Dec. 6, as follows: Schedule 9138, one motor-driven keyseating machine for Mountain View, Calif.; schedule 9139, one box-type electric furnace for Mountain View, Calif. Nov. 29, schedule 9140, one motor-driven sand mixer and muller for Boston; Dec. 6, schedule 9134, one cadmium plating outfit for Mountain View, Calif.; schedule 9116, one motor-driven precision bench lathe, for Mountain View, Calif.; Nov. 29, schedule 9106, two motor-driven screw cutting engine lathes for Boston.

Until Dec. 6, schedule 9154, one motor-driven planer-shaper, for Sewall's Point, Va.; schedule 9157, one motor-driven hack saw, for Brooklyn, N. Y.; schedule 9163, one motor-driven hobbing machine, for Boston; Dec. 13, schedule 9155, one motor-driven shaper-

miller machine, for Mountain View, Calif.

NEWPORT, KY.—Newport Rolling Mill Co. has plans under way for changes and betterments in its plant to cost about $200,000.

JENNINGS, LA.—Pure Oil Co., Chicago, will build a 12-mile pipe line from the Gueydan field to its loading terminal under construction at Lake Arthur, La.

NEW ORLEANS—Hansen's General Auto Repairing & Service Station Inc. has been incorporated with $10,000 capital, by Earl F. Hansen, president.

CRYSTAL SPRINGS, MISS.—City plans immediate construction of a new municipal electric light and power plant to replace present plant.

POPLARVILLE, MISS.—City plans construction of an electric light and power plant and a pumping plant for the waterworks system, to cost $100,000. V. B. Smith Jr., Gulfport, Miss., is engineer.

TAZEWELL, VA.—Jewel Ridge Coal Corp. plans development of a hydroelectric power plant and dam on Dismal river in Buchanan county, to cost $125,000.

Wisconsin

CLINTONVILLE, WIS.—Four Wheel Drive Auto Co. has booked orders for 32 heavy duty type motor trucks. The California highway department has bought 15 units and a foreign government has ordered 14 army service units.

EDGERTON, WIS.—City council will soon select an enginering firm to prepare plans for a new $40,000 sewage disposal plant by Dec. 15. Alfred Tiesberg is city clerk.

MADISON, WIS.—Capitol Fence Co. has been organized by Madison and Milwaukee interests represented by James A. McCall and is equipping a plant at 215 South Dickinson street to manufacture a general line of wire and a combination wood and wire snow fence.

MARINETTE, WIS.—Three large mill buildings of the Marinette & Menominee Box & Mfg. Co. were destroyed by fire and reconstruction and re-equipping will start as soon as insurance adjustment has been made. Dan Coffey is general manager.

MENOMONIE, WIS.—City council has divided an order for 400 water meters between the Badger Meter Mfg. Co., Milwaukee, and the A. P. Smith Mfg. Co., Orange, N. J. This is the first purchase in complete meterization of the municipal water service.

MILWAUKEE—Allis-Chalmers Mfg. Co. is planning the expenditure of about $200,000 in betterments in its plants.

MILWAUKEE—An order for 2,190,000 chain-type key rings has been placed with the B. Ulrich Lock & Key Works, 944 North Third street. First delivery has been made.

OSHKOSH, WIS.—Board of public works has let a contract for pumping equipment for the new $250,000 sewage project to Yeomans Bros. Co., Chicago, at $17,493.

Missouri

WASHINGTON, MO. — City plans erection of a municipal electric light and power plant. Burns & McDonnell Engineering Co., Interstate building, Kansas City, Mo., is engineer.

Oklahoma

OKLAHOMA CITY, OKLA.—Oil Field Engineers Inc. has been incorporated to manufacture and install oil field devices, by Lewis D. Hilton, 531 West Main street, Oklahoma City, Okla.

OKMULGEE, OKLA.—John Penrod Co. has been incorporated with $25,000 capital to manufacture oil field drilling equipment, by John Penrod, Commerce building, president and manager.

Texas

BURNETT, TEX.—City is having surveys made for a complete waterworks plant, including a pumping unit, distribution system and deep well. J. H. Berretta Engineers Inc., 1203 National Bank of Commerce building, San Antonio, Tex., is engineer.

DALLAS, TEX.—Industrial Steel & Iron Co. has equipped a plant at 805 North Mont Clair street for fabrication of ornamental iron.

FORT WORTH, TEX.—New cracking stills and power plant equipment will be installed at the local plant of the Sinclair Refining Co., it is announced by W. T. Dinkins, southwestern district manager. L. W. Barbour is plant superintendent and H. S. Flinchbaugh is chief engineer.

Minnesota

ST. PAUL, MINN.—Minnesota Mining & Mfg. Co., Forest and Fauquier streets, is planning an addition to cost $40,000.

ST. PAUL, MINN.—Herzog Ornamental Iron Works has been awarded the contract for ornamental iron work for the new postoffice at Atlanta, Ga.

Nebraska

HUMBOLDT, NEB.—Humboldt Brick & Tile Co., A. W. Busboom manager, plans to rebuild its brick plant recently destroyed by fire, probably early in summer. Estimated cost is $28,000.

Pacific Coast

ALAMEDA, CALIF.—Burns, McDonald & Smith, engineers, 1031 South Broadway, Los Angeles, has been making a survey of the municipal electric light plant to determine economy of continuing to buy electric power or to

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operate its own generating plant. A site for the latter is available.

LOS ANGELES—Up-to-date Pattern & Foundry Corp. has moved to larger quarters at 2444 East Eighth street and will enlarge its production of snap flasks, aluminum, brass, bronze and copper castings.

LOS ANGELES—Southern Pipe & Casing Co. will spend $75,000 to equip a plant for the manufacture of automatic electric welded steel pipe and water well casing. A plant has been leased in Azusa, Calif., with 17,000 square feet of floor space. R. A. Stumm is head of the company.

SAN JOSE, CALIF.—City, W. Popp, city engineer, will purchase the privately-owned waterworks plant and equipment and will improve and operate it.

Dominion of Canada

VICTORIA, B. C.—Consolidated Mining & Smelting Co. will soon open its copper plant at Traill, B. C., to take advantage of the trade preferential of 4 cents a pound. The product heretofore has been shipped to its plant at Tacoma, Wash.

GALT, ONT. — Goldie-McCollock Co. Ltd., Galt, Ont., has been awarded a contract by the city of Toronto for construction of four large boilers for the waterworks system at the low bid of $76,942.

HAMILTON, ONT.—Faith Mfg. Co. of Canada Ltd. has been incorporated with 8000 shares no par value to manufacture metal products, by Norman W. Byrne, Hamilton, Ont.

SMITH'S FALLS, ONT. — Smith's Falls Malleable Castings Ltd. has been incorporated with $40,000 capital to operate a general foundry and machine shop, by Monson G. Henninger, Smith's Falls, Ont. (Noted Oct. 17).

New Trade Publications

IRON—Electric furnace iron, known as Belectric, is discussed in a booklet recently issued by the Belle City Malleable Iron Co., Racine, Wis. Information is presented on the structure of the iron and the physical properties of the four grades produced are presented.

LOCOMOTIVES—Gasoline-driven industrial locomotives are discussed in bulltin B-29 recently published by the Brookville Locomotive Co., Brookville, Pa. Information includes a description of the power plant, general specifications of the unit and data on how to figure haulage capacity.

LIFTING MAGNETS—Electric Controller & Mfg. Co., Cleveland, has published bulletin 900 devotd to a discussion of the design and application of its line of lifting magnets. Illustrations include several pertaining to foundry operation, such as charging the cupola, handling pig iron, making up charges, and handling scrap.

STEEL CHAINS—An illustrated 44-page catalog on steel chains has been published by the Link-Belt Co., 910 South Michigan avenue, Chicago. Information on older chains is brought to date and many new sizes are offered. The sizes range from the small detachable steel chain having an ultimate strength of 950 pounds to powerful chains with strength as high as 1,500,000 pounds. Many attachment links are illustrated for elevating and conveying work and a line of sprocket wheels has been included.

MIXERS—Lancaster Iron Works Inc., Lancaster, Pa., has published a bulletin describing the mechanical features and operation of a counter-current mixer designed to handle a variety of materials. Various sizes and types of machines are illustrated and diagrams show the movements of roller blade during one revolution of the pan.

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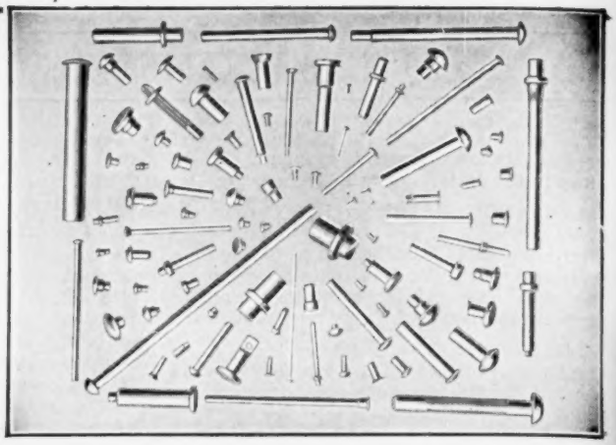

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